Electricity on the Farm

A Monthly Magazine for the Progressive Rural Family

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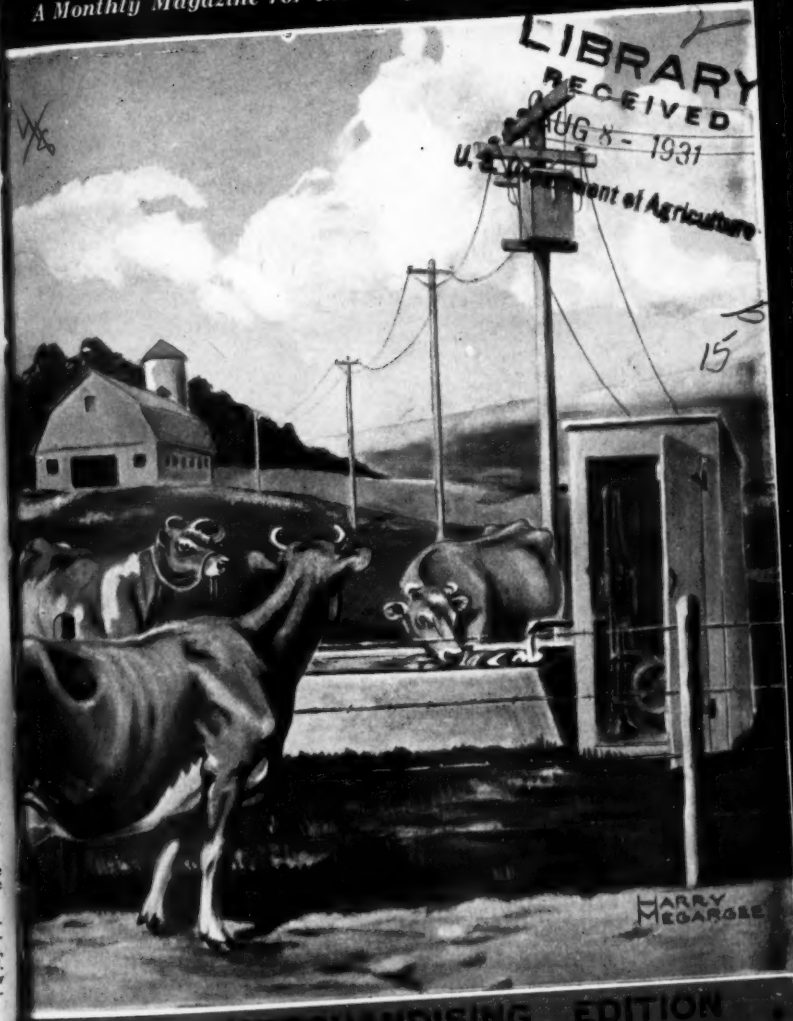

AUGUST 1931 • MERCHANDISING EDITION • For Equipment Dealers and Utility Representatives

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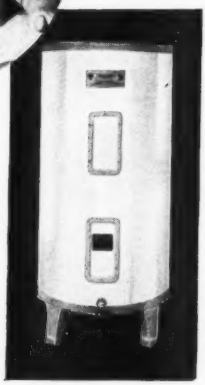

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MYERS
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Fig. 2557

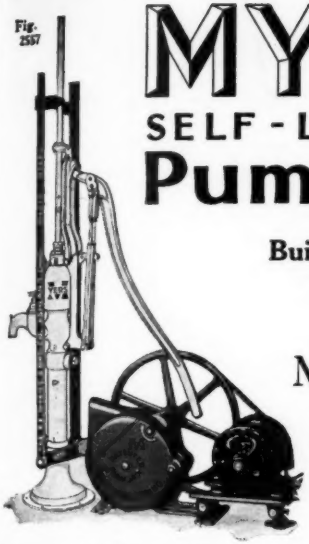

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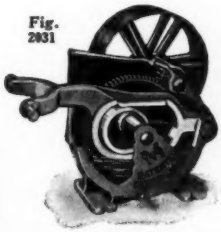
FIGURE 2557 above shows MYERS Pump Jack No. 424, complete with a ⅓ H.P. motor and all necessary fittings, ready to attach to the pump. Fig. 2619 below shows the same outfit protected by a neat metal cover that makes it absolutely storm-proof. Motors of ¼ or ½ H.P. can also be furnished at corresponding changes in price. The motor base can be adjusted to fit any of these three motors.

MYERS Pump Jacks are built to meet all conditions, for either engine or electric power. Prices are extremely reasonable. Write for complete information or see your MYERS dealer.

Fig. 2031



One-piece casting serves as oil reservoir and completely houses all gears and working parts, protecting them from dirt, rain, ice, sleet or snow. Perfect and continuous lubrication without care or attention.

Fig. 2619

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Pumps for Every Purpose, Water Systems, Hay Tools, Door Hangers

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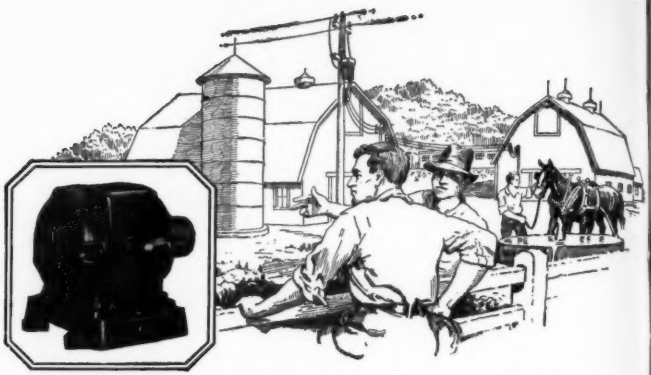

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G-E Type SCR motors, and G-E control built especially for them, can be obtained direct from your local power company or electrical dealer. Or if you buy motor-driven equipments, specify G-E motors and control in your order.

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204-25

GENERAL ELECTRIC

ELECTRICITY ON THE FARM

AUGUST, 1931

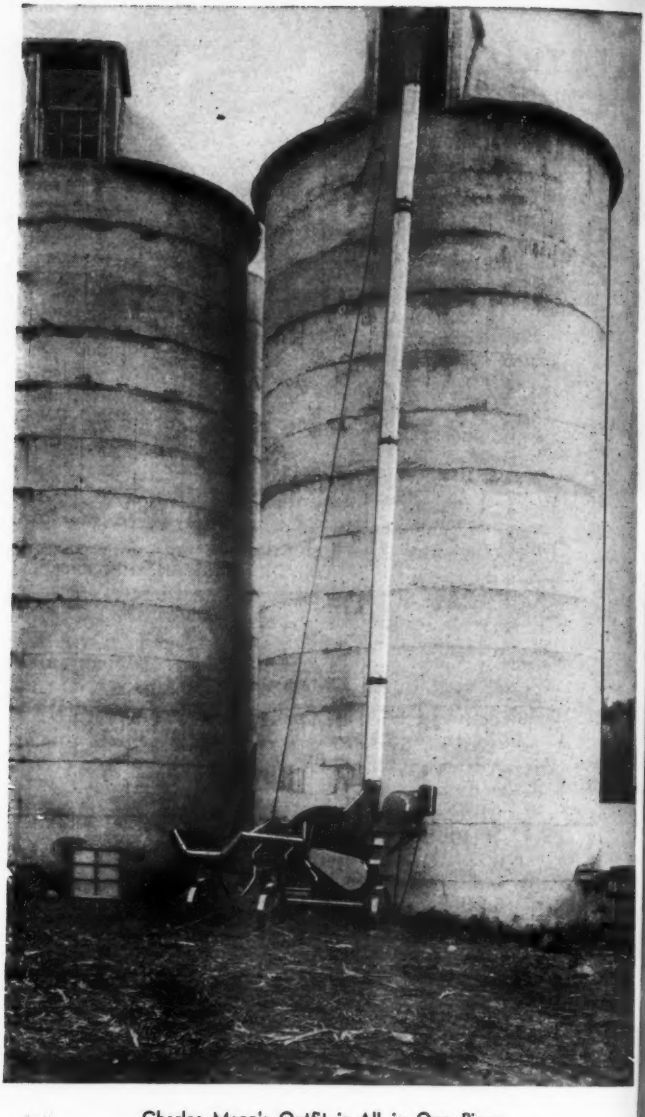
He had been eight years upon a project for extracting sunbeams out of cucumbers, which were to be put into phials hermetically sealed, and let out to warm the air in raw inclement summers.

JONATHAN SWIFT (*Gulliver's Travels*).

WHEN Dean Swift wrote the above two hundred and five years ago, he had probably no idea that "sunbeams" nor any of the effects they produced could ever be bottled. But modern science has in some measure converted the Dean's jest into a prophecy, for now foods may be treated with one element of sunshine, which increases their value tremendously, and can be stored in containers for consumption at some later date. As a matter of fact, the use of such irradiated foods may prevent some diseases such as are caused by a deficiency of sunlight.

But probably more wonderful than Dean Swift's plans for storing of sunbeams is the manufacturing of them by artificial means. Ultra-violet rays are coming into use on a wide scale for prevention and treatment of certain diseases, such as rickets. Modern poultrymen have found this artificially manufactured sunlight very effective in building up the sturdiness of their chicks. And now it is planned to irradiate cows so that their milk will contain those elements so essential in building sturdy bodies. While this latter application may never come into general use, there are many other ways in which artificial sunlight may be used with good effect. It is possible that the home of the future will be one without windows and one in which artificial sunlight is produced by electricity. When that time comes, the temperature within the house will be maintained uniform by heating or refrigerating equipment and the moisture in the air (humidity) will be maintained within the most healthful limits by electrical equipment.

So, after all, Dean Swift's ideas on bottled sunlight were not so fantastic.



Charles Mann's Outfit is All in One Piece

Charles Mann at Mayville, Wisconsin, mounted the five horsepower motor directly on his thirteen-inch filler and used a chain drive. He can move the outfit from one to the other of his big concrete silos and have it ready for instant use.

Silage cutting.
Silo filling Machinery

ENSILAGE CUTTING

By E. R. MEACHAM

FILLING the silo with a small crew and a small motor, 5 or 7½ h.p., has become the accepted practice on hundreds of dairy farms. It upsets all the traditional rush and hustle and hurry of the job for both the farmer and the farmer's wife, and makes it, instead, a regular job that the men on the farm can do.

Last fall, I was talking with a friend of mine, Mrs. John Stevenson of Dane, about going out to their farm several years ago to see them fill their silos with a five-horsepower motor when the method was new in this neighborhood.

A One-Man Job

"I have to laugh to myself when I think of silo filling this last year," said Mrs. Stevenson. "Mr. Stevenson was away on some insurance business. Kenneth, our boy, was running the tractor at a neighbor's down the road for their silo filling, and the hired man was here filling our silo all by himself. He is married, so he goes home for his meals. If I didn't look outdoors now and then and see him driving up with the corn, I'd never know that we were filling silo. It isn't much, as it used to be when I had thirteen or eighteen for meals till the silos were filled."

Her husband counts the saving in other ways. He told us about them one day when we were discussing the change from the old way to the new.

An Expensive Exchange

"I found that the last year I was part of our neighborhood ring," he said, "my son and I and two teams were away from home eighteen days exchanging work. That meant thirty-six days for a man and a team to get help to fill two silos.

"Now," he went on, "we put the corn in when it is ready and when the weather is right, not when it's our turn to have the silo filler. We fill and let it settle, then fill again. It works out fine for us."

Because running an ensilage cutter with a small motor was such a revolutionary suggestion, the University of Wisconsin and the Colleges of Agriculture at Cornell and at Minnesota, and engineers out in Nebraska and down in Kansas all set to work studying the mechanical changes or the operation changes that would be necessary to do the job well.

As a result of his study, Professor Duffee of the Agricultural Engineering Department of the University of Wisconsin has set up very definite directions for filling a silo with a small motor. They are a part of the Rural Electrification Handbook that department publishes. He knows from years of experience and observation that the man who heeds them will be able to do the job to his own profit and satisfaction.

These are his recommendations:

Cutter

Type: Flywheel. Two or three knife.

Size: 12 or 13-inch throat width is preferred. No feeder is used at the machine; therefore, smaller sizes are not practical. Larger sizes are not recommended because of higher initial cost.

Fan design for good elevation: The fan wings must fit the housing very closely. (Clearance not over ⅛ inch), especially at the tips or ends. A reasonably close fit at the sides is also important.

Motor

Motor: 5 or 7½ horsepower. Single phase. 1,800 or 1,200 R. P. M. (1,800 R.P.M. ball bearing, utility motor mounted on a truck is recommended).

Switch: Magnetic type with ther-

Mr. Stevenson Finds the Motor a Real Labor Saver.

mal overload relay. *Never use a fused starting switch.*

Transformer size: 5 H.P. motor—3 or 5 K.V.A. transformer. 7½ H.P. motor—5 K.V.A. or larger transformer.

Power Transmission

Belt: 4" to 6" wide. Standard motor pulley is 6½" wide. A 4" belt will have to be in first-class condition or kept very tight to transmit the full overload capacity as developed for short periods.

Avoid stiff belts on account of the small motor pulley. Use not over 4-ply stitched canvas or rubber, and single-ply leather belts. —A distance of 15 to 25 feet between pulleys is best. Somewhat longer or shorter belts can be used.

If the belt is not too short a crossed belt will have less tendency to flap and slip over the small motor pulley. A crossed belt is not satisfactory with an extremely small pulley.

Pulleys: *Motor pulley.* Fibre. 6½" face. *Cutter pulley.* Cutter pulleys vary from 18" to 24" in diameter for this work. Refer to table for proper cutter speed, then calculate the exact diameter of cutter pulley as follows:

$$\text{Cutter pulley diameter} = \frac{\text{Motor pulley diam.} \times \text{Motor r.p.m.}}{\text{Cutter r.p.m.}}$$

Motor mounted on cutter: This arrangement with a roller chain or multiple "V" belt drive is especially satisfactory. It is simple, compact, efficient and trouble-proof. The motor, switch and cable may be easily removed from a portable motor, and used for this job.

Operation, Care and Adjustment

Speed of the cutter: Practically the whole secret of cutting ensilage with a 5 H.P. electric motor depends upon operating the cutter at a very slow speed, and keeping it sharp and properly adjusted. Many of the older models of cutters will not elevate successfully at these slow speeds and a 5 horsepower motor will not pull the cutter at high speeds.

Knives: Sharpen every half day, being careful to maintain the original bevel. Adjust knives as close as possible to the shear bar

so as not to strike when running.

Ledger plate or shear bar: Replace or turn over to a new edge when badly worn.

Lubrication: Keep all working parts well lubricated.

Anchoring the cutter: A stake driven against the rear wheel next to the power is usually sufficient. An equally good anchor is to chain the cutter to a stake.

Anchoring the motor: The anchor should be fastened to the motor truck as near as possible directly behind the motor pulley. An iron or wooden anchor stake driven in the ground is satisfactory.

The following simple methods may be used for anchoring the motor and keeping the belt tight:

1. Self-locking block and tackle with ⅜", or ½" rope is best.
2. Small wire stretcher.
3. Pass a loop of light log chain or rope around the anchor stake and through the motor truck frame, then twist it.

Pipe: The pipe should be reasonably straight, and in fairly close alignment with the cutter. Where a telescoping section of pipe is used to adjust the height, it must be set up with the inner section at the lower end, otherwise it will interfere with proper elevation of the silage.

Silage distribution: This can be accomplished by hanging two sections of distributor to the elbow, and fastening them in such a position that the silage will fall directly in the middle of the silo and will roll down toward the sides.

Tramping is unnecessary: If the silage is tramped it must be done thoroughly or it is apt to spoil. If it is desired to distribute the silage without tramping, it can be done by stationing a man at the top of the silo to handle a section or two of distributor.

Feeding: Feed steadily, lapping the bundles about one-third. If the pitcher will take a little extra care in throwing the bundles on the feed table, a man will not be required at the cutter for feeding. This means quite a saving in labor.

Size of bundles: Average, medium sized bundles are satisfactory. It will not be necessary to split the bundles if they are not made too large.

Length of cut: Most silage is cut into ⅜ or ½ inch lengths. It is seldom cut longer than ½ inch and sometimes as short as ¼ inch.

The Men on the Ground is Only a Visitor, No Feeder is Needed.

Short cuts will reduce the tonnage per hour, and increase the current consumption per ton. Short cuts are a little harder to elevate.

Size of crew: The maximum size of crew which can be used to advantage depends upon the length of haul. The following crew is suggested:

1. One man on binder.

2. Two, three or four wagons unless the haul is extremely long.

3. One extra field pitcher, if desired.

Tests Attract Many

Hundreds of men have come in to the University and watched Professor Duffee set up his silo filler and tighten down his motor before the corn begins to come in from the flats down by the lake. They have watched him feed that corn through at anywhere from five to ten tons an hour. They have seen with their own eyes how the motor will labor to turn the wheel on some cutter running empty at 700 or 800, but will cut the corn and elevate it through a thirty-foot pipe if that speed is cut down to 400 or 500, depending as Table I shows you, on the diameter of the fan and the height of the silo.

A good many of these men have gone back to their own farms and tried out the new method for themselves.

Charles Mann at Mayville mounted the five horsepower motor directly on his thirteen-inch filler and used a chain drive. He can move the outfit from one to the other of his big concrete silos and have it ready for instant use without any bother of lining it up, anchoring it, or tightening the belt. Though the haul from his corn field to the silo is short, he uses four teams and has two men unloading. He sets the filler for a quarter-inch cut and elevates about thirty feet.

A check-up during the first year he used a motor for silo filling showed that 190 good loads of green fodder went into these silos. A meter on the motor registered 275 kilowatt hours when the silos were filled.

Over at Green Lake, Westfield Brothers used a five horsepower

A Handy Portable Motor Operating in Pennsylvania.

TABLE I

MINIMUM SPEEDS FOR VARIOUS SIZED ENSILAGE CUTTER FANS TO ELEVATE INTO SILOS OF DIFFERENT HEIGHTS

Diameter of Cutter Fan in Inches	Height of Silo in Feet								
	25'	30'	35'	40'	45'	50'	55'	60'	75'
	Revolutions per minute of cutter fan								
30	500	530	575	610	650	690	720	750	835
32	465	495	540	575	610	645	675	705	780
34	440	465	510	540	570	610	635	660	735
36	415	440	480	510	540	575	600	625	695
38	390	415	450	480	510	545	570	595	660
40	370	395	430	460	485	515	540	565	625
42	355	380	410	435	465	490	515	535	595
44	340	360	390	415	440	470	490	510	570
46	325	345	375	400	425	450	470	490	545
48	310	330	360	380	405	430	450	470	520

*NOTE: These speeds are based upon carefully conducted tests with a reasonable allowance to insure uninterrupted elevation. Good cutters will positively operate at these speeds.

motor to cut their corn in quarter-inch lengths and used only 100 kilowatt hours to fill a silo 12 feet in diameter and 50 feet high. They also used a 13" cutter with the motor mounted on it and transmitted the power by chain drive. More than forty people came in to watch this motor do the job.

More detailed tests were carried on by Ira Larrabee at Beloit when he first tried this method.

His silo is 30 feet high and he ran his 16" cutter at only 390 R.P.M., cutting the silage to half-inch lengths. Four loads of corn totalling 6¼ tons went through the cutter in 51 minutes; an average of 7 1-3 tons an hour. The energy amounted to a little more than ¾ kilowatt hours per ton.

Electricity is cheap power for a silo filler.

Milking Machines Save Labor

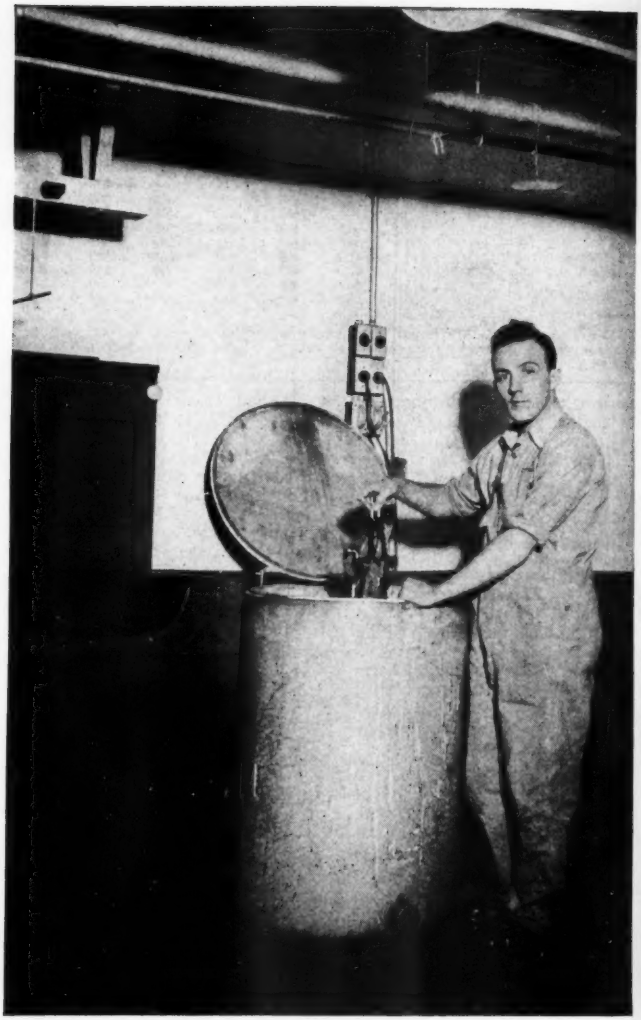
The man labor used in caring for daily cows in Nevada varies all the way from 81 hours to 280 hours a year for each cow, as indicated by 44 detailed farm records secured by the experiment station of that state. The average chore time for herds which were machine milked was only 106 hours as against 141 hours for all herds of 15 or more cows, milked by hand. The average time required in all hand milked herds—which on the whole had fewer cows than the machine milked herds—was 151 hours, which showed that where labor saving equipment was not available labor costs were higher.

For a 25-cow herd, a milking machine will make a net saving in labor of $290 each year according to this experiment station. This calculation assumes that labor is valued at 40 cents an hour and allows an expense of $50 annually for the machine.

Self Feeder for Feed Mill

A valuable development for use with feed grinders is an automatic self feeder, similar to the type employed on threshing machines. Such feeders are fitted with a governor which will stop the feeder on a slight variation in the speed of the cutter. Any kind or condition of grain or roughage can be fed into the cutter without slugging. An automatic roller is usually employed to keep feed from being jerked into the mill by the hammers or knives when the feeder is stopped. It also makes the movement of feed more steady during actual operation of the feeder.

This regulating device will be of great use to live stock men, particularly those who grind large quantities of feed and who find that they must be constantly at the table of their grinder when roughage is being ground.



The Semi-Scalder in Operation

A Hi-low thermostat regulates the water temperature of this semi-scalder. Controlled temperature is the chief advantage of this operation. Picking is thus made easy and a better market product obtained. The switches on the wall are of vapor and moistureproof construction, with pilot lights on each circuit.

Artificial Heat and Cold Aid in

PICKING AND PACKING POULTRY

By N. D. HERRICK

BOSTON'S North Shore trade is most exacting when it comes to buying dressed poultry. Those in charge of the kitchens of the many clubs and high class residences in this section will take only the best. That is why one of the largest poultry farms in Massachusetts has built up such a big trade in this section, and each year finds sales mounting higher.

One of the secrets of this farm's success in producing dressed poultry of the finest appearance is in the procedure employed in the picking and subsequent treatment of the birds.

Improper scalding is ofttimes responsible for the poor appearance of poultry carcasses, for too much heat may discolor the skin while too little may make the bird hard to pick and result in an unnecessarily large number of pin feathers remaining.

Semi-Scalding Poultry

In preparing the birds for packing, this poultry farm uses what it terms a semi-scalder. Semi-scalding for poultry is a comparatively new name for an old practice. Birds have been scalded for ages as a preliminary step in removing the feathers and the general understanding was that the hotter the water the better.

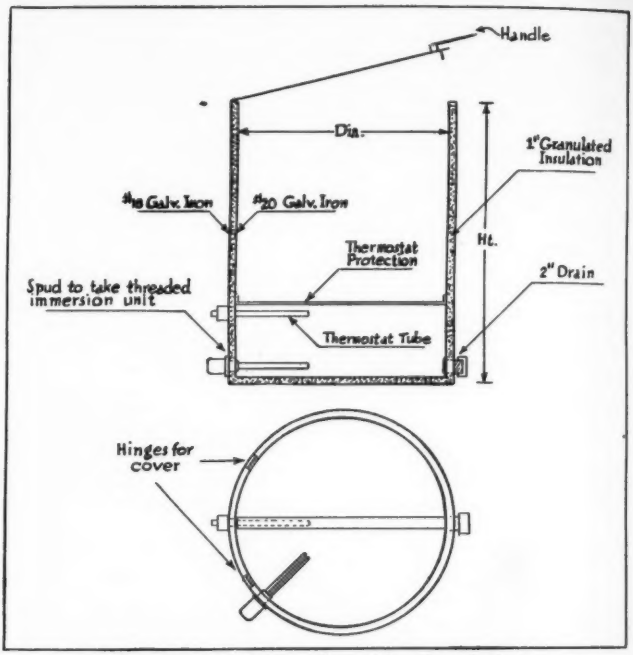
Research and experimentation, however, have shown that there is a very decided "best" temperature for the scalding water. This temperature varies slightly for different classes of fowl but lies within very narrow limits from 127° to 129° F. The fact that these best temperatures are so low gives rise to the name semi-scalding.

Where poultry is to be picked dry, very skillful killing is most essential, for it takes a highly trained hand to make sure that in the sticking operation the brain of the bird is instantly paralyzed, thus assuring relaxed muscles. Unless the muscles are relaxed, it is difficult to remove the feathers.

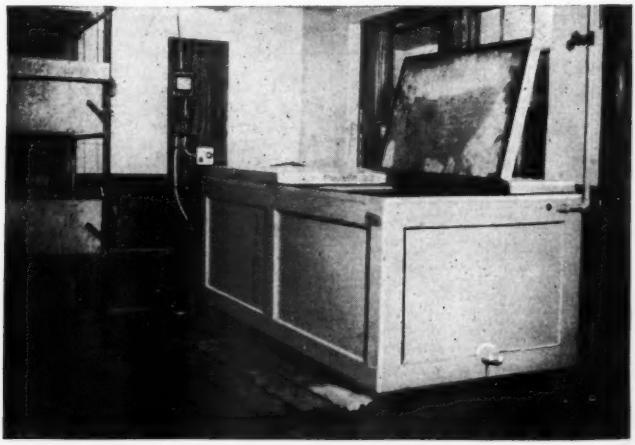
Thermostat Controls Temperature

An alternative for skillful sticking is this practice of semi-scalding. And where equipment is provided which maintains an accurate water temperature, its advantage is the evenness of the bird in color and general appearance, to say nothing of the saving in labor made possible by using unskilled help. The important part of semi-scalding is the control of water temperature. It is generally recognized that electricity is the most easily controlled heat, but even with electricity, regulation within one half a degree is not easy to obtain. In building a semi-scalder, the selection of a proper thermostat was the most difficult task. Ordinary thermostats, when applied to this job, showed a variation in water temperature of from three to seven degrees, Fahrenheit. But finally a thermostat which provided for very close temperature control was secured.

The scalding tank decided upon is 3 feet high, 2 feet in diameter and completely covered with one inch of packed asbestos. The inner tank and outer shell are of



Cross-Section Diagram of a Poultry Semi-Scalder.



The Wet Refrigeration Box Where the Birds are Placed in Cold Water to Quickly Remove Body Heat.

galvanized iron. The tank is equipped with two 1000-watt immersion heating units, one unit operated manually and the other controlled by a thermostat. It is not necessary that all of the heat be controlled by the thermostat, for better temperature regulation of the water can be secured where only a portion of the current, in this case, 1 kilowatt, is under thermostatic control.

Two kilowatts is not enough electric capacity to heat a tank of cold water within reasonable time. Hence hot water is supplied to the tank at around 125° Fahrenheit and the electric element merely serves to replace heat losses and maintain the desired semi-scalding temperature.

In actual operation the power consumption of the scalder is low, one kilowatt being ample when broilers and fowl are being dressed. The one kilowatt unit is on less than one-half of the time the scalder is in operation.

Both dry storage and wet storage mechanical refrigeration are employed on this farm. The dressed fowl are immersed in cold water as soon as the feathers have been removed, the purpose being to close the pores of the skin, which had previously been opened in the scalding process, and to quickly remove the body heat.

After the body heat has been abstracted the birds are removed and placed in the dry storage box. In this box they are packed, rather than hung up, being placed in layers with wet muslin cloths between the layers.

Running Water For Fall Pigs

Fall pigs given water from an automatic waterer, kept from freezing by employing a heater, showed an increase in profits of 17 per cent in margin over feed costs as compared to pigs given water in open troughs, according to a recent experiment at the Iowa station. Gain were increased by 5 per cent. and the feed requirements for a given gain were reduced 10 per cent. due to water being available at all times! A fall pig weighing around 100 pounds was found to consume from 7 to 10 pounds of water daily, which is more than the amount of feed eaten. Water under pressure can be secured at a very low cost when its convenience and profit for livestock operation is considered. When available at all times there is no tendency to slight the stock in rush seasons. An abundance of water is even more essential for pigs in hot weather because of their susceptibility to high temperatures.

On President Hoover's Ranch

During the past two years considerable modern equipment has been obtained for use on President Hoover's ranch which is located in the San Joaquin Valley, California. Four tractors furnish the power for the planting and cultivating tools found on this 1,300 acre tract. Originally it was planned to make this an all-cotton farm, but at the present time only 380 acres are in this crop. Under irrigation, yields averaging two bales to the acre are secured.

Twenty acres of an improved variety of Hopi beans were harvested last October. A part of these were sold for seed to other ranches, but from that portion retained for planting it is anticipated that 1,500 pounds of beans an acre will be harvested this coming year. This variety, a baby lima, is said to have been greatly improved by the work of Prof. W. W. Mackie, University of California, who bred out the off-colored beans and produced a fair-skinned even-textured bean with a firm pod that does not easily shatter as does the common blackeye variety.

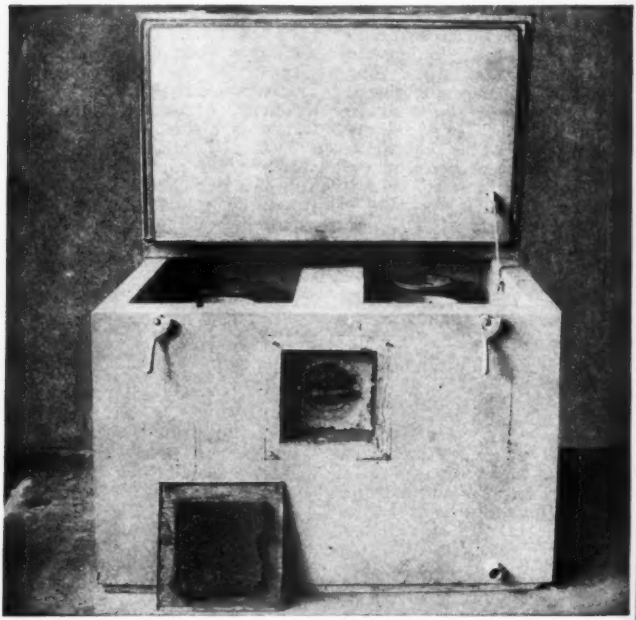
Three varieties of rubber plants are growing on a six-acre plot, six hundred plants being set out to each acre. All of these are about two years old and will be watered and cultivated for two more years or so before being harvested for crude rubber. Other crops grown on this ranch include corn, peaches, apricots, plums, grapes and potatoes.

Proving The Value of MILK COOLING

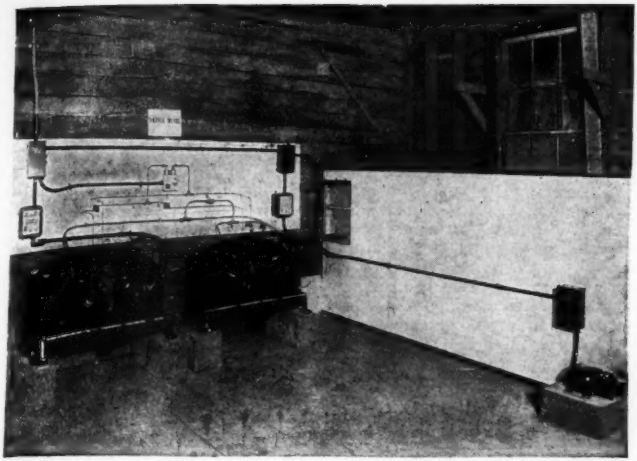
By CHARLES D. BYRNE
Oregon State Agricultural College
Corvallis, Oregon

RIGID pure milk ordinances in all major cities and the demand for sweet cream in the manufacture of quality ice cream and butter have focused a great deal of attention on the problem of properly cooling milk on the farm. And with the rapid extension of electric service into the rual communities, dairymen are becoming interested in the possibilities of mechanical refrigeration of their product.

To answer the question of



Four can insulated milk cooling tank showing cut-out to install a refrigerator coil.



Typical refrigeration installation made on an Indiana farm; two compressors and brine circulating pump shown

whether electric energy can be economically and efficiently applied to the cooling of milk, experimental workers at Oregon State College in cooperation with the state committee on electricity in agriculture conducted a series of comparative tests in 1929. The results, just published, showed that milk in ten-gallon cans can be cooled quickly and to sufficiently low temperatures to prevent excessive multiplication of bacteria with rather simple and practical electric refrigeration systems. The tests showed further that the cost of cooling by this method was less than equally efficient cooling with ice.

A practical top-opening tank-type refrigerator box equipped with a mechanical refrigeration unit was designed by the agricultural engineering department for the test. Four types of boxes were used in the tests: dry box with baffle air circulation, dry box with forced air circulation, refrigerated water not circulated and refrigerated tank with well water at 55 to 65 degrees and with milk cooled by ice.

All the methods except the well water system were effective in cooling the milk to a point where bacterial growth was arrested to such an extent that there was little or no increase in bacterial count in from 12 to 24 hours.

However, the time required to cool the milk in the dry storage tests, both natural circulation and forced circulation, was too long to make the method practical. To reach the required temperature of about 50 degrees, which is necessary to stop bacterial growth, took 12 hours by both of these methods, although the forced air method did bring the milk down to 51 degrees in six hours. However, to properly cool the morning milk to satisfactory shipping temperatures, faster cooling is necessary.

Wet Storage Efficient

The wet storage methods proved more efficient and practical. Milk pre-cooled over a tubular cooler and then placed in mechanical refrigeration with the water circulated came down to 44 degrees in just one hour. It took three hours to reach the 50 degrees where the water was not circulated. Where the milk was not pre-cooled, it reached 48 degrees in one hour in

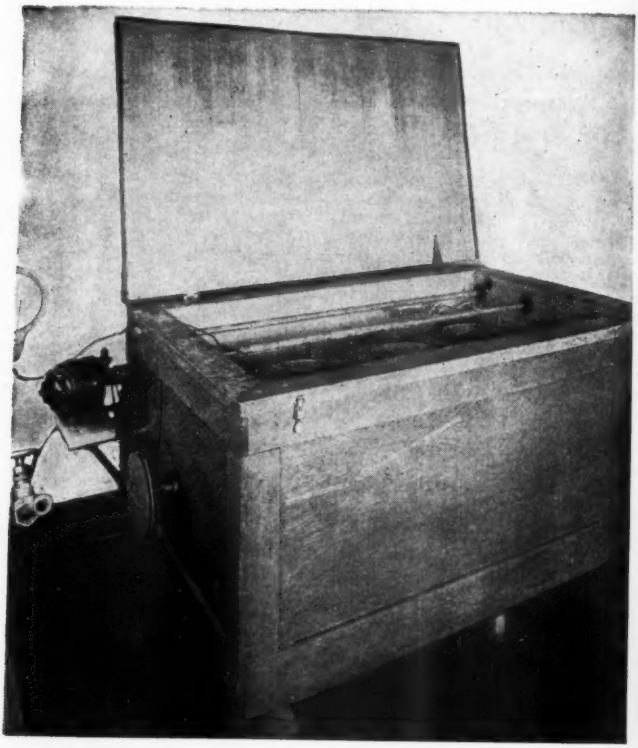
the water circulated refrigerator and required four hours to reach 50 degrees when the water was not circulated in the refrigerator.

Precooling Before Shipment

For immediate shipping, then, the best method proved to be precooling with a tubular cooler from 95 degrees to about 67 degrees followed by mechanical refrigeration in circulated water. The experimenters did find, however, that it was not necessary to cool the milk down to below 50 degrees immediately to maintain a low bacterial count. And, they report, the use of a tubular cooler makes additional equipment to wash and sterilize and offers additional opportunity for contamination of the milk. So where extremely rapid cooling is not necessary, the tubular cooler is not recommended.

Careful tests were also made of the costs of cooling 100 pounds of milk to below 50 degrees in an insulated tank with the mechanical cooler and comparisons made with the cost when ice was used.

To cool the evening milk and hold it over night and then cool the morning milk, required 45.6 pounds of ice per 100 pounds of milk if the milk is not pre-cooled and 28.4 pounds if it is pre-cooled.



Experimental insulated tank type box with metal lining and wood exterior. The motor and water circulator pulley are shown at the end of the box.

With ice figured at ½c per pound, this cost would be 22.8c and 14.2c respectively by these methods.

Under year around average conditions an electric refrigerator and tank-type cooler will require one kilowatt hour to cool 100 pounds of milk. This would mean a cost of 3c if the rate happens to be this low. A liberal allowance for interest and depreciation on equipment will not exceed 20c a day. For 8 cans of milk a day this amounts to about another 3c per 100 pounds, making a total cost of about 6c per 100 pounds of milk. There is no doubt, the experimenters say, that the small electric refrigerator is much cheaper than ice and is more automatic.

Premium Prices Attractive

"I am not expecting most dairymen to install electric coolers unless buyers are willing to pay a premium above the ordinary price for milk cooled to 50 degrees on the farm shortly after milking," said F. E. Price, who with C. J. Hurd and G. V. Copson of the agricultural engineering and bacteriology departments carried out the experiments. "Many of the creameries in Oregon are paying a premium of from 3 to 5 cents per pound for butterfat if the cream is received sweet. For test purposes we have a refrigerator installed on a farm producing 10 gallons of cream per day. The electric energy for cooling in July was only 72 kilowatt hours. The premium would take care of all the costs and give a nice profit."

Summer Grinding Pays

That it pays to have ground feed for cows while on pasture has been shown by the experience of many members of dairy herd improvement associations. One dairy farmer who fed grain on pasture during June last year obtained an average production of 40.8 pounds of butterfat or 11.2 pounds more from each cow than from the same herd in June the previous year when they depended upon pasture alone. The increased income when grain was fed was $3.18 above feed cost for each cow. Another member in July fed only shelled corn and had a feed cost of 33 cents a pound for butterfat. In August he fed a mixture of 450 pounds of ground corn and cob-meal, 450 pounds ground oats, 100 pounds cottonseed meal and the feed cost dropped to 24 cents a pound. This was in spite of the fact that all cows were milked in July, while two were dry in August A feed grinder works profitably all the year around and makes it possible to feed most economically at all times. Very often spare time, such as after a shower, can be utilized for this chore.

Calves Should Receive Water

Seven pounds of skimmilk fed twice daily to calves do not contain sufficient water for maximum development according to Prof. F. B. Morrison of the animal husbandry department of Cornell University. In two trials carried on while he was at the University of Wisconsin there was a striking difference in those calves which had all the water that they wanted twice a day, in addition to skimmilk, compared to those having skimmilk only. The calves receiving the water had better appetites and ate quite a little more concentrates and hay. For the average of the two years, the calves fed 14 pounds of skimmilk daily to six months of age, with a good concentrate mixture and hay, but without additional water, gained only 1.36 pounds daily. Those receiving, in addition, what water they cared to drink twice a day, gained 1.84 pounds. Running water, when available in the barn, makes it easier to give the calves better care and in this way secure cheaper gains.

That Fishing Resort

"Mother, mother," wailed the farmer's little daughter, "do you know what Jimmy has done?"

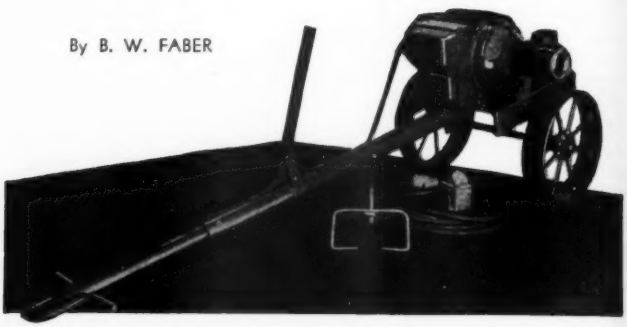
"No. For heaven's sake, what has he done now?"

"Oh, dear, the summer boarders are coming tomorrow, and he's been down to the pond and caught the pickerel."

BALING WITH ELECTRICITY

A five-horse-power does a good job in baling straw, despite its diminutive size as compared with the baler. Skeptics are quickly silenced.

By B. W. FABER



A Close-Up of the "Quick Set" Motor.

AN undercurrent of excitement prevailed at the J. L. Baur farm one August morning. The threshing and baling crews were at the farm ready to separate the grain from the straw and chaff, and place the latter in neat bales for future use. And instead of the usual noisy and boisterous tractor, there stood a small electric motor, silently and patiently waiting for an opportunity to show the world what it could do with the baling machine.

Seems Small for the Job

Needless to say, there was shaking of heads and murmurs of disapproval because such a pigmy should be connected to so large a machine. And indeed the 5 horsepower portable motor did look small as it was being wheeled into place. The baler loomed as a giant with its large flywheels and 16" pulley, standing about 7 feet high, whereas the portable motor was only about 2½ feet high.

The crew of the baler were openly skeptical about the ability of the ambitious electric motor. Some were ready to go to the machinery shed to "warm up" the tractor. It was only the confidence born from experience in using this small portable motor that enabled the operator to carry on serenely without ever doubting the outcome of the venture.

But as Moore so aptly wrote, "Few and short were the prayers we said." The time until starting was short, and there were a few things which needed immediate attention. For one thing the portable motor came with three pulleys so that a range of speeds could be secured. The baler operator had no idea how many revolutions per

minute the machine was supposed to operate at. The tractor operated at about 850 revolutions per minute, which was approximately half the speed of the motor and therefore it was natural to choose a pulley half the size of the one used on the tractor. This indicated about a 5½ inch pulley on the motor. Mr. Baur had been using the motor in connection with some work requiring the largest pulley and therefore the pulley puller was used to pull this off. The 5½ inch pulley was then placed on the motor shaft.

All this time the baler crew were at hand with mirth provoking comments and exaggerated helpfulness. Someone volunteered to get a crank so that the "little thing" could be helped out a little on the hard pulls. Still another suggested getting the large boulder which was below the barn so that the motor could be held down. The operator, however, had a discarded king pin available, and anchored the "quick-set" unit very effectively and quickly by driving this stake through the eyelet provided in the tongue of the motor.

After driving the stake the belt was placed in position. Usually a belt about 30 to 40 feet running length, with about 15 to 20 feet between pulley centers, is used. In this particular instance the belt which was available was about 70 feet long and the pulley centers were therefore about 34 feet. This was considerably longer than is necessary. For best results a belt should be quite flexible and should be endless. The belt used was an endless 4 ply canvas, 6 inches wide and in good condition. The belt was tightened by means of the telescoping tongue of the motor. This tongue consists of two pipes, one telescoped within the other, with a jack arrangement to extend (or contract) the tongue, backing the motor into the belt for the correct tension. Figure 1 shows the portable motor in operation. It can be noted that the belt is of about the correct tension considering its width and length.

This baling operation was carried on in connection with the threshing. The thresher, located in the barn, was being operated by a tractor. The wind stacker was extended through an opening in the side of the barn and the straw

Fig. 1. The 5 Horsepower Motor Anchored in Position, Driving a 16x18 Inch Baler.

An Electric Motor Furnishes Steady Power for Wood Sawing.

blown outside in a pile near the baler. The baler was started at about 8 o'clock. At eleven o'clock a separate meter was installed so that the kilowatt hour consumption of electricity could be measured. During the remainder of that day, covering a period of about 5 hours, 14½ tons of straw were baled. On Mr. Baur's rate, which is very reasonable because a large number of kilowatt hours are used every month, the cost of operation came to less than a dollar. There was no water to carry, no gasoline to pour into the tractor, no oil to fuss with. And as the owner of the baler said, the cost of electricity is hardly enough to pay for pouring in the gasoline.

Handled Load Readily

The only stop made during the day was for placing a watt-meter in the circuit. As the belt warmed up it stretched some, but the slack was taken up without even stopping operations. The motor handled the load very readily, it appearing that the baler was by no means loading the motor to capacity.

The crew of the baler could not understand how a 5 horse-power electric motor could do as much as the large tractor they had been using. This was quite easily explained. The tractor was by no means loaded to capacity when driving the baler. On the other hand, the electric motor has a tremendous overload capacity, a 5 horsepower motor being capable of carrying 10 to 12 horsepower for a short period of time without damaging the motor. In baling, this overload capacity is important because the load is so fluctuating. When the straw was being compressed the baler would require considerable power but the demand immediately fell off until the plunger again compressed. The large flywheels on the baler helped the motor to carry the peak loads.

In many respects an electric motor is like an infant in that it must be protected. An overloaded tractor gives the operator warning by the radiator boiling over, or by the speed dropping off materially. Naturally if the operator does not replenish the water supply and keep the engine cool, it will soon stall. An electric motor also overheats and overloads, but this heat is not readily noticeable. An electric motor could thus continuously be pulling considerably more than its rated output with the result

(Continued on page 41)

Electricity on the farm.
Hotbeds!

Giving Sweet Potatoes a Start by

HEATING THE BEDS

BY SAM B. MANES

THE sweet potato plant market in Arkansas opened two weeks earlier this year, due to an experiment of Howard Thomas, Little Rock plant grower who adapted electricity to the heating of hotbeds with complete success. The experiment was the first of its kind in the state.

Thomas' hotbed showed marked superiority over all other types that he uses. Plants came up quicker and grew faster because of the even temperature which he was able to maintain in the hotbed.

In a fire heated bed planted at the same time plants were 12 days later in sprouting, while in an unheated bed they were 22 days later in showing growth.

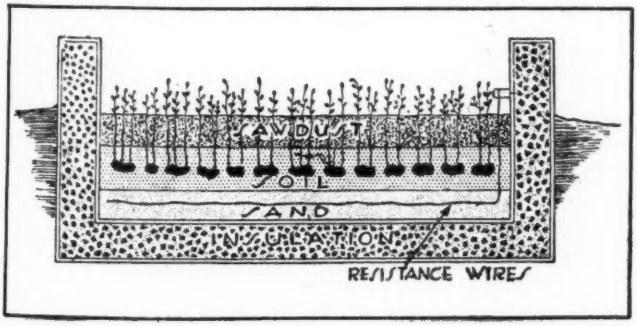
The bed is 45 feet long and three feet wide. It will produce approximately 60,000 plants. The frame is hollow insulated with sawdust. Heating wires are imbedded in a two inch layer of washed sand in the bottom of the bed. Over this is placed two inches of soil, a layer of potatoes, and then a covering of two inches of soil.

A two-inch covering of sawdust fills the dual purpose of holding moisture and acting as a top insulation. The resistance wires are lead covered, and are hooked onto a 110-volt circuit.

A temperature chart kept by Mr. Thomas clearly indicates the success of the electric heated bed. It shows that the temperature of 70 to 80 degrees was maintained in the bed, while the outside temperature, during the same three weeks, varied from 28 to 72 degrees.

Advantages

"The biggest advantage of this type of bed is the uniformity of growth, quickness of production, minimum cost and minimum amount of care required," Mr. Thomas said. "With this bed I am independent of outside weather. It will be possible to contract potato plants and tell exactly what



Cross-Section Sketch of a Potato Bed Heated Uniformly With Electricity.

day they will be ready," he says.

Next winter Mr. Thomas will grow radishes in the same bed. He will cover it with glass cloth and expects to grow radishes during the entire winter. He says that next spring he will use electricity altogether for heating his beds.

Thomas' plants grown in the electric bed were certified this spring as grade A. It is the most practical method of growing certifiable plants, he says.

A Small Motor Does Chores and SAVES DRUDGERY

By J. C. Scott

SIX people graded eighteen tons of potatoes in nine hours on the Otto Reise Farm near Sumner, Washington.

By the ordinary method, where a sack of potatoes is dumped on the floor or table, one man has to work hard to grade one ton of potatoes per day.

The above record is very important in successful farm operations in these days, when we are all interested in reducing the cost of production, and when industry is taking the lead over farming in financial returns because of its ability to adapt electricity to its operations.

Endless Belt Arrangement

Mr. Reise did not expect his men to work harder than they did by the old method of grading, but he used his head in rigging up a frame on which works an endless belt arrangement, operated by a ¾ H.P. electric motor. Potatoes are emptied on the belt and as they are carried along the men separate them into the different grades where they belong. With the help of this simple machine and motor, six men accomplish as much as eighteen would by the old method.

Provides Even Speed

The machine could be run by hand, without an electric motor. However, the motor keeps a much more even speed, and works for just about 3c an hour, so that if a man took the place of a motor on this particular job he would be earning for Mr. Reise approximately 3c an hour.

$5 EACH FOR UNUSUAL PICTURES

We have need for pictures showing unusual applications of electricity to farm or farm household tasks, as well as human interest pictures showing benefits from electric service. Picture may be either from a serious or humorous angle.

Should you have any such snapshots, send them in. If they meet our editorial requirements, you will receive $5 each for them.

It is necessary, however, that each picture be accompanied by a descriptive caption of not more than 100 words.

Send your pictures to:

Editorial Department
ELECTRICITY ON THE FARM
24 W. 40th St., New York City

ELECTRICAL HOUSEKEEPING

Conducted by
GAIL MEREDITH

Taking Care of the New Refrigerator

LONG before that new electric refrigerator comes into your kitchen you have undoubtedly picked out just where it is going to stand. The mechanic insists that it must stand exactly level, but you know that it is quite as important to have it stand near your work table and stove and dining room so it will save your steps in getting the meals, and you have been planning its location to cut down that kitchen mileage.

Just Plug In

Then some fine morning the men from the electric company bring in your box and set it up just where you want it and plug the cord into a convenience outlet.

"That's all," they say, "as you hover about expectantly. "It's going."

As soon as they go back down the steps, you will probably want to turn the switch off for a few minutes while you get a pan of warm water with a little borax or soda in it and wash out the inside of the box carefully. Then you will turn the current back on for several hours before you put food into the box.

No Job at All

Keeping the refrigerator clean after you get it going is no job at all. Once a month, or once a week, folks differ on this and you will most certainly set up your own times and seasons according to your own ideas, wipe off all the shelves and sides of the box, including the inside and outside of the chilling unit, with luke warm water, no soap, just soda or borax again. Then wipe it dry with a clean cloth. If you wipe up any food you spill right away, these occasional cleanings will not have to be very frequent to keep your box always sweet and clean.

The trays for the ice cubes should be washed in hot water whenever they are emptied to insure perfectly clean ice for your drinks. Then if you wipe each tray off carefully on the bottom before you put it back in, it will not freeze to the chilling unit and will come out easier next time.

Learning to store the food properly is necessary to get the best results from your refrigerator.

The most delicate foods go in the coldest place, of course. Milk, cream, and meat stock belong in this area. Meats and fish go in the next coldest place. Butter and eggs belong here, too. Fruits and vegetables, because they have a tendency to dry out and because some of them have decided odors, should be kept in the warmest place. That is where the current of air ends its trip from the chilling unit, through the box and back to the chilling unit again. If the odors are kept near the end

of that path of air, they will not be taken to other food but will be carried smash bang against the chilling unit where they are taken out with the moisture in the air and left in the frost. That is why the run off when the refrigerator is defrosted should never get into the trays or into other food. Ghosts of past cauliflower and forgotten oranges will haunt you if it does.

Most of the foods stored in a mechanical refrigerator should be covered. This will help to keep the air sweet and clean and it will prevent a loss of moisture in the food itself. Since the more moisture the air picks up, the harder the motor must work, covering food is in the interest of economy, too. It has been estimated that about two-thirds of the cost of cooling a box is due to taking the moisture out of the air.

There are many types of refrigerator dishes, all designed to store a good deal of foood in a small space by fitting one on top of the other, or close side by side. Glass dishes are an advantage because they let you see at a glance what you have in the refrigerator. If they are oven glass they do double duty. If breakage is high at your house, some of the fine looking enamel dishes will help you cut it down.

Since raw meats should never be covered, the flat coverless glass trays make excellent storage dishes for them.

The shelves should never be so crowded that the air cannot pass through them freely. The woman who spread heavy paper neatly over all the wire shelves in her refrigerator was cuting off the passage of cold air pretty thoroughly.

One more routine job faces you in caring for your mechanical refrigerator. That is periodical defrosting. Since the frost is a good insulation, it keeps the chilling unit from absorbing the heat from the box so readily. That means that the motor must work longer to draw the heat out of the box and keep the temperature down.

You can scarcely set a definite date for this job, because the frost does not accumulate according to the calendar but according to the humidity in the atmosphere and the amount of moist or steamy foods you put in your box.

To defrost all you have to do is

Mrs. Fred. H. Labaugh of South Bend, Indiana, With Her Electric Refrigerator and Electric Range in Her Farm Home.

The farther you are from town the more you need a

GENERAL ELECTRIC

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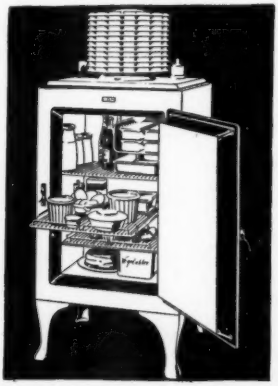

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Sliding shelves to bring food in easy reach; sanitary porcelain Super-Freezer; acid-resisting, porcelain-lined interiors; greater food storage-space.

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New refinements and advantages plus lowered prices now make the General Electric more valuable than ever.

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All General Electric Refrigerators and Milk Coolers are guaranteed three years against service expense.

Call your General Electric dealer now — or write us direct.

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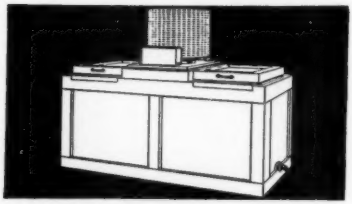


Domestic, Apartment House, Commercial Refrigerators—Electric Water Coolers, Milk Coolers

turn off the current. The ice just drips off. Never, never try to hasten the job by prying it off with a pick; that might chip the enamel. Ordinarily the box will be defrosted in the morning if you turn off the current at night. If you want to do it quickly, some time when you are working about in the kitchen, turn off the current, fill the ice trays with hot water and slip them back in place. That will melt the ice off in a hurry and you can clean out the box, refill the trays and start over again.

Mrs. Taylor Tries a Motor

THE other day, a man I know, said: "Women are getting mixminded. All this talk of substituting steel for muscles and motors for mothers is apparently showing them all of a sudden that a mechanical mixer might just as well be doing some of the beating and kneading and mixing that goes into the three meals a day for their families."

It is not as sudden as he seems to think; in fact it has been going on for some time, this gradual substitution of watts for woman power in every job machines will do.

The mixer is ready to beat up a cake.

Mrs. William Taylor who lives a few miles out of Fond du Lac in western Wisconsin has had a power mixer in her kitchen for several years. We drove out there one snowy day last December to talk with her about it. While Mr. Taylor took my husband out to the barn to look at his fine long line of Ayrshires, Mrs. Taylor and I visited in her fascinating kitchen.

It is a room I will long remember, almost everything in it is black and white except the little green dots in the window curtains and the green cans on the shelves. The big electric range is white; the wood range is black and white; the refrigerator is white; the water heater is white; the long porcelain topped table in the middle of the room is white; and the cabinet that holds her big kitchen mixer is white.

A Simple, Sturdy Kitchen Assistant

The mixer looks simple enough. Its sturdy metal frame entirely conceals the motor and the machinery that does such a surprising number of different things. There is the beater, the egg whisk, the pastry cutter, the dough hook and the roller for the colander and sieve that slide onto the steel shaft that hangs down from the housing above. They go on and off easily, and each has its own place in the convenient white cabinet so Mrs. Taylor can put her hand on any of them in a minute.

The meat grinder, the coffee grinder, all the slicers and shredders and choppers, and the ice cream freezer slip into a socket in the front of the frame. Two big bowls to hold the food fit on to metal arms that hold them in place.

One of the pictures shows Mrs. Taylor standing beside the mixer cabinet. The bowl is already on, so is the beater that will mix her cake for her.

After I had admired the kitchen and examined the motor to my heart's content, Mrs. Taylor took

(*Continued on page 32*)

Approved Tourist Homes Given Distinctive Signs

The accommodation of tourists has developed everywhere into an industry especially popular with farm families on important highways, and agricultural extension agents have long urged the rural people in their counties to maintain high standards of sanitation and food if they wish to attract the tourist trade, says the United States Department of Agriculture. But the West Virginia extension service has gone even a step further by offering to supervise "Tourist Homes" of high quality and give the owner permission to use a distinctive sign that shows what may be expected by the visitors.

Some Requirements

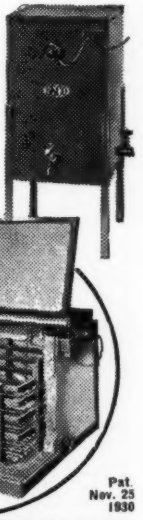
Clean, comfortable, well-ventilated rooms, good beds and springs, soft mattresses, clean sheets and light, fluffy blankets are required to meet the standard set for the supervised home, as well as good food, such as fried chicken, home-cured ham, pure milk and cream, fresh eggs, home-grown fruits and vegetables and other products fresh from the farm. Reasonable rates, uniform among all supervised homes, cordial hospitality, and consideration on the part of the hosts are also insisted upon. Truly these are all items which the tourist has been led to believe he would find in country places, but which, alas, have frequently not materialized.

Garden and Dairy Products Help Increase Income

In most of the homes in different parts of West Virginia already permitted to display the special extension service sign one will find for sale the famous wild-blackberry jam made from local native fruit, and other garden, dairy, and poultry products that help increase the farm housewife's cash income. Thus, one industry helps another, and the extension service helps both.

ESCO

Electric Milk House Equipment for Low Bacteria Counts

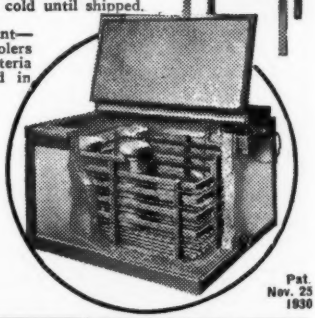


To raise profits you must lower bacteria count. And to lower bacteria counts, you must have plenty of hot water, thoroughly sterilized cans and pails and facilities for quickly cooling your milk to below 50° and keeping it cold until shipped.

Esco Electric Milk House Equipment—Water Heaters, Sterilizers and Milk Coolers enable you to market milk very low in bacteria count . . . . that will be profitable and in demand.

Thoroughly engineered. Built in the very best manner and from the best materials for the purpose. Esco sets the standard of quality.

Ask your Power Company, Electric Refrigeration Dealer or write direct to us.



Pat. Nov. 25 1930

ESCO CABINET CO.

West Chester, Pa.

The Standard of the Better Dairies

Mrs. Taylor Tries a Motor

(*Continued from page 30*)

me back to the living room and we sat down for a comfortable chat. Of course, I wanted her to tell me how she used her mixer. "Do you remember why you got the motor in the first place?" I asked her.

"Of course I do," she answered. "I got it to save time and to save work."

Both of these things are particularly important to Mrs. Taylor because besides keeping her big house in apple pie order and helping with the various things that a woman always finds to help with on a farm, she has a retail egg business of her own. She delivers breakfast eggs to customers in Fond du Lac.

"Do you use it as much as you thought you would?" I questioned.

"All the time," she answered with her pleasant smile. "I make bread with it, and when I tell you that in the eighteen years we have been married I've only bought three loaves of bread, you know that is a pretty steady job. I make cakes and cookies and frostings with it. I mash vegetables and I use it at canning time. Oh, it works out its keep all right."

There is a certain quick coffee cake that Mrs. Taylor mixes with this motor that is very popular at her house.

"I can make it in a jiffy," she told me, "and we like it very well. First I sift two cups of flour, three teaspoons of baking powder, one-half teaspoon of salt, and one-half cup of white sugar together. Then I put this into one of the bowls and cut into it two level tablespoons of butter. I use the pastry cutter for this, but I put the beater on for the rest of the mixing. While the mixer is cutting the shortening into the flour, I break an egg into a cup and fill the cup with milk. Then I pour this into the bowl and beat the whole thing up.

"For the top of the cake I use half a cup of sugar, two tablespoons of flour, one teaspoon of

(*Continued on page 34*)

This is One Side of Mrs. Taylor's Kitchen.

Dairy Cattle Utilize Oats

CERTAIN sections of the southeast produced an unusually large oat crop last year, reports J. P. LaMaster, chief of the Dairy Division at Clemson College in South Carolina. Since the grade of southern oats is superior in quality to much that is shipped in, Southern farmers are advised to feed local or sectional supplies to dairy cattle as well as other livestock.

Oats fit into the dairy ration well and their substitution for corn will release feed for hogs. Furthermore cows can utilize the hulls of oats better than hogs.

"For herds producing not over three gallons per cow daily, equal parts of grounds oats, wheat bran, cottonseed meal, and corn-and-cob meal give best results," Mr. LaMaster states. Calves getting skimmilk can obtain their entire grain supplement from whole shelled oats, but for heifers, cows, and bulls ground oats are best.

"In short," says Mr. LaMaster, "It is safe to recommend that for all dairy rations one-fourth of the grain mixtures could be composed of ground oats."

Any feed grinder of suitable capacity may be used to grind oats. Since most dairy farms are equipped with a feed grinder these days, there should be no drawback to the necessity of grinding oats for feeding.

In large herds where the job of mixing ground feed is quite a task, one of the newer feed mixers of smaller capacity than commercial machines will be found a big labor saver. These machines are relatively new, but are welcomed by farmers with medium sized or large herds.

Calm Rewarded

"Were you nervous the first time you asked your husband for money."

"No, I was calm—and collected."

FREE BOOK
tells how to have
RUNNING WATER
for a few cents a day!

New Low Prices!

Write for this interesting FREE BOOK that explains just what you want to know about running water. What type of plant will be best for you? How easily can it be installed? How little does running water cost? These and many other questions covered fully. Many illustrations. 18 pages of diagrams. This valuable book is *free!* Write for it. Fairbanks, Morse & Co., Dept. 8581, 900 S. Wabash Avenue, Chicago.

FAIRBANKS-MORSE
Home Light and Water Systems

Was $75 . . . NOW ONLY
$66
(Cash f. o. b. factory)

Mrs. Taylor Tries a Motor

(*Continued from page 32*)

cinnamon and three tablespoons of soft butter. I mix this all together and spread it on the cake either over sliced apples or as a topping by itself. Then I bake the cake for about twenty-five minutes in a 425° oven. I plan to have it come out right at meal time for it is better hot."

Then she told me that the motor is kept busy at canning time turning a porcelain roller round and round in a colander rubbing fruit pulp through the sieve, getting seeds out of tomatoes or out of the grapes she cans for pies.

Mashes Potatoes

Then there is the every day job of mashing vegetables to keep it busy.

"I'd never think of mashing potatoes by hand," said Mrs. Taylor. "While the potatoes are cooking I have some hot water standing in one of the mixer bowls so the bowl will be hot when I put the potatoes in it. Then I set the bowl into a pan that makes a water jacket, and pour in boiling water to keep those potatoes hot while the motor is mashing and beating them, and a long time afterwards if I need to."

Mrs. Taylor's use of the motor is typical of the varied jobs, some big, some little, that a motor can do whle the woman who pushes its switch is busy at something else.

Serve Small Portions at First to Children

By Katherine Goeppinger

"GIVE small amount of food at a time when serving little children." advises the specialist in child nutrition of the Bureau of Home Economics, United States Department of Agriculture. "Even when they have learned to like a number of foods children are bewildered by too much variety at once. The very young child is a 'one-at-a-timer,' and gets along best when allowed to clear his

plate of one or two foods before anything else is given him. Always serve children small enough portions so that they can finish the whole amount. Parents sometimes overestimate the capacity of the young child and serve him so much that he is too discouraged to begin to eat, or that he cannot finish even though he makes a good start. If a child is unusually hungry, second helpings may be given."

The little girl in the picture is seated comfortably at her own little table, where her meals have been given from the time that she could first handle a spoon or fork. The joy of accomplishment became all-absorbing when she first learned to pour her milk without spilling out of her own little pitcher, into her tumbler, which was carefully chosen, to fit her tiny grasp. The meals are served on an oilcloth doily of gay pattern, the floor is washable, and she wears a large bib, so that if she spills a little food in the process of learning self-help, it really doesn't matter.

This child's mother has made a special point of serving the child's food so it will be attractive, and the little girl always has her own dishes and utensils. This helps the mother to say also, "This food is for you—children do not have the same kind of food, always, that grownups do." In this way, the problem of a child's teasing for foods that it should not have may often be successfully avoided.

Free Literature

Manufacturers are glad to send you booklets and pamphlets describing their products, from which you can obtain much useful and valuable information. Check over this list carefully, writing directly to the manufacturers for those you can use.

"Cullman Electric Pump Drive" is the title of an interesting folder which can be obtained from the Cullman Wheel Co., Chicago, Ill.

•

"Wherever There is Life There is Need for Running Water" and why is described in the water service booklet obtainable from Fairbanks, Morse & Co., Chicago, Ill.

•

Portable Farm Motor including motor and truck, described in Form 2917. This can be obtained by writing The Master Electric Co., Dayton, Ohio.

•

The "Reel Blade," a paper of interest to poultry raisers and hatcherymen, can be secured by writing Ira M. Petersime & Son, Gettysburg, Ohio.

•

Detailed information regarding the advantages and labor saving features of electrically operated hay hoists may be obtained by writing for bulletin entitled "Do It With Power" to The Universal Hoist & Mfg. Co., 200 East 14th St., Cedar Falls, Iowa.

•

Bulletin 14-1000 describes "Century Portable Power Unit" consisting of an electric truck and starting equipment. Write Century Electric Co., St. Louis, Mo.

•

"Fresh Running Water" is the title of a new four page folder which can be obtained from The Dayton Pump & Mfg. Co., Dayton, Ohio. This folder illustrates and describes several of the most popular models of Dayton Water Systems.

(*Continued on page 37*)

"They Keep a-Running"

5 Horse Power Century Portable Power Unit

Replaces Hand Power

Every electrified farm should have a Century Portable Power Unit to replace hand power wherever motors can do the job easier and quicker . . . This unit has been developed especially for farm work. Its portability permits wheeling it from one job to another. When placed in the operating position it rests firmly on a solid foundation, giving all the advantages of a permanent installation . . . Furnished for either single or 3 phase power motors in standard 3, 5 and 7½ horse power sizes.

CENTURY ELECTRIC CO.
1806 Pine St. St. Louis, Mo.

40 U. S. and Canadian stock points and more than 75 outside thereof

Century MOTORS

Questions and Answers

Conducted by
H. J. GALLAGHER
Agricultural Engineering Dept.
Michigan State College

Note—Readers are invited to send in questions which will be answered in the order received.

Question: *Does a motor use more current on* 110 *volt service than on* 220 *volt service?*

Answer: No. On 110 volt service only one wire supplies the energy to the motor and on 220 volt service two wires are used as feed wires. The fact that on 110 volt service the rate of flow of electric energy (amperes) is twice as great as on 220 volt service may be misleading and result in the idea that twice as much current is used.

A parallel comparison would be the rate of flow of water through one pipe as compared to the rate of flow of water through two pipes where the same amount of water was delivered in a like period of time. Through the one pipe the water would have to flow twice as fast to produce the same number of gallons as through the two pipes. A ¼ h.p. motor using approximately 250 watts per hour requires about 4.8 amperes of current over one wire on 110 volt service or 2.4 amperes over each of two wires on 220 volt service. Smaller wires can thus be used for 220 volt service than on 110 volt service. Motors over ½ h.p. in size should be connected to 220 volt service wherever possible.

Question: *I have a ½ h.p. motor on a pump jack. It is supposed to run on either* 110 *or* 220 *volt service. I do not have* 220 *volt service and the motor runs slow and heats up. There are four wires from the motor. I connected the two center wires together and the two outer wires to the circuit as directed but I believe something is wrong.*

Answer: You have connected your motor for 220 volt service. Instead of connecting the two center wires from the motor together as you have done each center wire should be connected with an outside wire so that the wires from the motor are in pairs and each pair connected to the service wires for 110 volt service. It is essential that the proper wires be connected in pairs. Check your wiring directions carefully or secure the service of a qualified electrician. Do this at once before your motor is ruined.

Separate Surplus at Home

A number of Illinois milk producers are helping to solve the surplus problems by selling only the base milk and separating the remainder at home according to reports of testers of dairy herd improvement associations. It has been found that the cream can be more profitably churned at home or marketed through other channels, thus saving trucking and other shipping charges on the milk. Skimmilk can usually be fed to most any class of livestock on the farm, including cows in milk, cutting feeding costs as well as having some value even as fertilizer.

Judicial Finger Moves

Judge: "Speeding, eh? Ten dollar fine."
Culprit: "O. K., Judge. Got change for a twenty dollar bill?"
Judge: "Nope. Twenty dollar fine!"

Customer: "I'd like some rat poison."
Clerk: "Will you take it with you?"
Customer: "No, I'll send the rats over after it."

Free Literature

(*Continued from page 35*)

The Lauson Corporation, New Holstein, Wisconsin, have a complete booklet of instructions for installing electric pump jacks properly that is available for the asking.

•

Bulletin No. 22, "Shearing the Farm Flock" will be sent to those requesting it by Chicago Flexible Shaft Co., Chicago, Ill.

•

"Electric Milk House Equipment" is the title of an attractive folder explaining the use of milk coolers, water heaters, and dairy utensil sterilizers, which may be obtained by writing Esco Cabinet Co., West Chester, Pa.

•

Motor driven pump jacks, hammer mills, burr mills, and ensilage cutters, are fully illustrated and described in special electric bulletin, which may be obtained by writing the Stover Mfg. & Engine Co., Freeport, Ill.

•

"What Running Water Means" is the subject of an interesting bulletin put out by The Kewanee Private Utilities Co., Kewanee, Ill. Ask for E-2.

•

Battery brooding of chicks as well as canopy brooding with electric current is shown in the 16 page booklet on "Oakes Electric Poultry Equipment" which can be obtained by writing Oakes Mfg. Co., Inc., Tipton, Ind.

Better Credit Risks

The president of the Georgia Bankers Association said recently, "Farming is the same as any other business and must follow the same rules. The merchant and the manufacturer cannot look solely to the prices they get, but they must also keep the expense of doing business just as low as they can."

George Woodruff, long a country banker, although now the head of one of Chicago's large banks, suggets that the bank cashier would be less likely to say "No" to an application for financial aid if "the farmer seeking a loan for the purchase of equipment would only show his banker that the machine he wants will cut his costs and help to increase his margin of profit."

THE SILVER PRINCE

PAUL

Running Water at Low Cost » »

AN *unfailing, abundant water supply,* instantly available for the kitchen, laundry or bath! A plentiful supply of water *with adequate hose pressure* for sprinkling the lawn or garden, fire fighting or washing the car!

This new Paul Silver Prince Water System is a real outfit, *pumping 300 to 400 gallons per hour* and yet the price is amazingly low. You can have the same modern conveniences as your city neighbor—and enjoy them while you pay for the Paul on twelve easy monthly payments. *Write today!*

Fort Wayne Engineering & Mfg. Co.
Fort Wayne, Ind.

Fort Wayne Engineering & Mfg. Co.,
1722 N. Harrison St.,
Fort Wayne, Indiana.

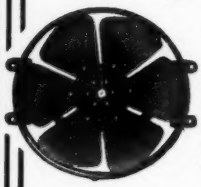
Send complete information and prices on the Paul Silver Prince Water System and easy payment plan.

*Name*_____

*Address*_____

*City*_____ *State*_____

VENTILATE with MARATHON "OK" FANS



You could not do good work if you had to breathe bad air. Neither can cows or chickens. This powerful Marathon

Dust Proof Motor

means longer life; drives specially designed 6 blade 'prop' that moves more air. Note these low prices and write for all details!

16"—1725-850 RPM
or 1140-550 RPM $57.50
18"—1725-850 RPM
or 1140-550 RPM $67.50
20"—1140-550 RPM $77.50

Marathon Electric Mfg. Co.
Wausau, Wisconsin

Cullman Electric PUMP DRIVE

THE FIRST UNIT OF A WATER SYSTEM

Add other Cullman units to the Pump Drive as you desire them.

The Automatic Control and the Deep Well Casing head, plus the Pump Drive form a complete water system for house and barn.

Trouble - proof— compact— inexpensive. Circular on request.

CULLMAN WHEEL CO.
1342 Altgeld St., Chicago, Ill.

To Our Farm Friends

Only products manufactured by reputable firms will be found in the advertising pages of ELECTRICITY ON THE FARM. You may buy with assurance that they represent full value.

PETERSIME ELECTRIC INCUBATORS

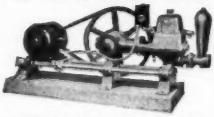
Hatch Bigger Better Chicks

That live and grow to produce profits for hatcheryman and flock owner. PETERSIME INCUBATORS built in five sizes, from 1,400 to 15,984 capacities.

Write for new Free Catalog. No Obligation

IRA M. PETERSIME & SON
Gettysburg, Ohio

BUY DURO NOW



THE DURO COMPANY
537 E. Monument Ave., Dayton, Ohio

DURO

Automatic Water Systems

WINNERS of June Contest First Prize—$25.00

"When dark deeds are brought to light."

Jane Fitzmaurice, R. 2, Green Lake, Wis.

The following titles have been selected as winners of the $5 cash prizes:

"The prowler in a sorry plight, When daddy switches on the light." W. H. Peck, R. 3, Kent, Ohio.

"Oh! for a convenient outlet." Mrs. W. R. Baker, Crowville, La.

"Junior forget the newly installed light, When he slipped down to snitch a bite." Katherine Holladay, R. 3, Box 6, Orange, Va.

"Just Desserts." S. N. Ferguson, Malone, Franklin Co., N. Y.

"An unexpected revelation, Due to 'lectric 'lumination." Grace M. Seltzer, Findley Lake, N. Y.

RULES for August Front Cover Title Contest

For the best title to this month's front cover illustration, a cash prize of $25.00 will be awarded.

In addition, we will pay $5.00 for each of five titles given honorable mention.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

The winners will be announced in the October issue.

Only the farmers or members of the farm family, to whom this magazine was sent, are eligible.

Only one title may be submitted.

Use the form below or write your answers on a plain sheet of paper in similar form.

Contestants must answer question (a).

Write plainly and send your suggestions to the Title Editor, ELECTRICITY ON THE FARM, 24 W. 40th St., New York, before September 1.

My title for the August Front Cover picture of ELECTRICITY ON THE FARM is.....

.....

.....

.....

.....

(A) If you own an electric Vacuum Cleaner fill in

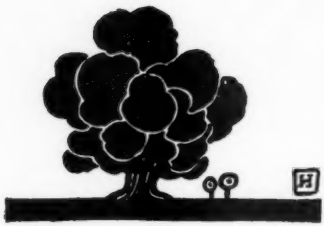
(1) _____
Brand Name

(2) _____
Name of Dealer from Whom Purchased

_____
Address of Dealer

My name is..... R. F. D.....

Post Office..... County..... State.....



Under The CHESTNUT TREE

Truth Above All

Boy: "No, Mister, I don't want to sell this trout."

Angler: "Well, just let me measure him so that I can truly say how big the trout was that got away from me."

"What's the idea of the Browns taking French lessons?"

"They have adopted a French baby and want to understand what it says when it begins to talk!"

He Knew

Father: "What happens to little boys who tell stories?"

Son: "They're kept late at school."

Father: "What happens to them when they grow up?"

Son: "They're kept late at the office."

Tourist (having looked over historic castle, to butler): "We've made a darned mistake. Tipped his lordship instead of you."

Butler: "That's awkward. I'll never get it from him."

—College Humor.

Got Her Number

First traffic Cop—"Did you give that dame a ticket?"

Second—"No, I was going to. But when I asked her for her name and address she gave me her telephone number, too."

"Just think! While I was out with some of the fellows the other night, a burglar broke into our house."

"Did he get anything?"

"I'll say he did—my wife thought it was me coming home."

"Doris," said the harassed mother, "what a noise you made on the stairs. Now go back and come down properly."

Two and a half minutes later Doris re-entered the room. "Did you hear me come down stairs this time, mother?"

"No, dear, you came down like a lady."

"Yes, mother; this time I slid down the banister."

How It Started

"What are those holes in the wood?"

"Those are knot holes."

"They are holes! Don't you think I know a hole when I see it?"

Stenographer—"Howja spell sense?"

Employer—"Dollars and cents or horse sense?"

Stenographer—"Well, like in 'I ain't seen him sense.'"

Coming Clean

Magnolia: "When Mandy went and got married, us girls done give her a shower."

Pansy: "Dat sho' was nice. Ah'll bet her husban wuz glad to get 'er all nice and clean."

"How did you get that black eye, Mrs. Higgins?"

"Well, sir, me 'usband came out of prison on 'is birthday."

"Yes?"

"And I wished 'im many 'appy returns."

"I'm crying 'cause my dog ran home."

"Where is that?"

"That's what I want to know."

Gallantry

Sambo: "Did Brudder Brown gib de bride away?"

Rastus: "No, suh; he gwine let de groom find her out fo' hisself."

Her Papa: Don't think for a minute you're going to marry my daughter."

Her Caller: "Fine—you get me out of this mess and I'm your friend for life."

Grace: "To think you used to catch me in your arms every night."

Jack: Yes, dear, and now to think I catch you in my pockets every morning."

Mother: "Willie, I heard that instead of going to Sunday School this morning you played football."

Willie: "That isn't true, and I've got a string of fish to prove it."

$75 will buy a genuine

DELCO Waterboy

($78.50 with galvanized tank. Prices f. o. b. factory)

● **Small down payment. Easy terms. Write today for free literature.**

DELCO APPLIANCE CORP., Dept. C-27, Rochester, N. Y.

1-16

Baling With Electricity

(Continued from page 24)

that it would soon burn out unless some form of protection was used. So called thermal relays are used to protect electric motors. These relays allow the motor to carry a high overload for a short period of time, but if the overload persists the motor is automatically disconnected from the line.

One can readily realize that a portable electric motor would not be a profitable investment for a baling job alone. But there are various other machines to which a portable motor can also be readily applied, such as feed grinders, ensilage cutters, hay hoists, concrete mixers, wood saws and so forth. It is a convenient source of power, and one which is very economical to use.

A Correction

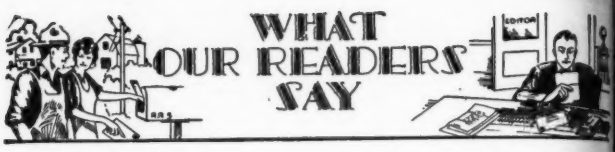
In the July issue of this magazine, on page 32, under the heading "Baling Solves Hay Storage Problem," the price of baled hay was given as $25 per ton. This is an error. The statement should read: "Leafy, bright colored hay, cured in the windrow, and worth $10 or more per ton, is too valuable to leave out in the fields to weather in the stack."

Hay is selling in some sections at present at as low a rate as $7 per ton, though in many dairying sections it brings $10 or more per ton.

Our Advertisers

have data and information which can help you greatly. Get in touch with them.

The LAUSON
DIRECT GEARED ELECTRIC JACK
Built like a high grade auto transmission.
Also interchangeable motor or gas engine.
Model No. 3
The Lauson Corporation
700 Michigan St., New Holstein, Wis.



Double Duty

Speaking of radios soothing dairy cows, as described by Mr. Kable in your June issue, one evening a short time ago, our minister's wife was running their radio. Suddenly she was startled by a loud bellow outside the window near which she was sitting. A neighbor's bull had broken out of the pasture across the way, attracted, perhaps, by the sound of the radio. Who can guess?

R. I.

* * *

A Word for the Water System

As to my opinion in regard to what household appliance is the most valuable in the home in addition to an electric range, refrigerator, vacuum cleaner and clothes washer, we preferred a good water system and have it installed, which is very convenient. How wonderful it is to have running water for the bath, lavatory, barn, kitchen, laundry, poultry house, dairy, garden and yard. Also, how nice it is to have a drink of fresh water whenever we please without having the trouble to run to the well in cold, rainy or stormy weather. It is a great labor saver which gives us more time for pleasure. So nice it is for sprinkling the lawn and garden. Oh! how we children enjoy it.

Orville Vandermause,
R. 2, Box 67, Casco, Wis.

* * *

Waffle Weather

Those past few days, with a pleasant crispness in the air, makes one feel it is waffle weather. The calendar is not much help in deciding the days in which one has a keen appetite for waffles. In fact, all through the year, in and out of every season waffles are good. Waffles are not partial for breakfast, luncheon or dinner, but appear as properly and taste as good at one meal as the other, for when served with any kind of syrup, maple or plain, they are a "swell" dish. Then too, when one has unexpected guests drop in, waffles are always appropria for they form the main dish fo any meal. They are quite prope for parties, and with a variet of recipes, they make a novel re freshment for parties. I consid the waffle iron the most valuabl household appliance. In my hom I use it more than any other.

James Dillon,
R 2, DePere, Wi

* * *

Lights Take the Lead

I love the lights the best of al Where there are children one ca go out and do their work an not be afraid of the childre throwing the lamp down and set ting the house on fire. When on wants to go from one room t the other just turn the switc We do not have to sit in th dark any more because we forg to go to the store for kerose and it happened often in the pa because it was not always con venient for someone to purcha the necessary kerosene. In goi to the barn one can have th yard lights turned on and see th way to the barn.

It even means more eggs. Whe the lights are lit for the he they scratch and work and th means more eggs. The electric costs so little it is hardly n ticed.

Give me electricity all over t the farm! There's nothing handy as electricity.

Mrs. George Verhaagh
Gre Bay, W

CLASSIFIED ADVERTISIN

The LYON ELECTRIC COMPAN manufacture electric poultry equipme exclusively. Long, practical experien in the highly developed California re electric field enables us to furn quality devices at reasonable pri The LYON line includes: Brooder Incubators — Egg Testers — Burgl Temperature and Power-off Alarms Heating Elements—Thermostatic S plies—Time Switches—Wiring Sund Write for catalog today. LYO ELECTRIC COMPANY, 2075 Ma Street, San Diego, California.

MERCHANDISING SUPPLEMENT
Electricity on the Farm

Vol. 4 AUGUST, 1931 No. 8

PUSHING SEASONAL BUSINESS

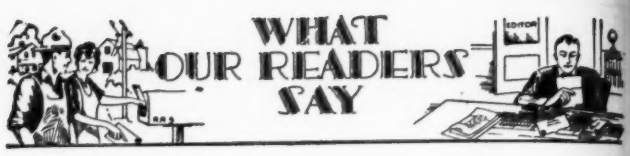
Rural service representatives of Indiana power companies, at a recent conference in Indianapolis, set forth plans for devoting particular emphasis during the different months of next year to the equipment which they consider should be pushed by salesmen during those months.

For instance, in May stress will be placed upon refrigeration, while in June ranges will be pushed with extra effort.

It is planned by the power company representatives to use what advertising space they carry in farm journals, and in other papers reaching farm customers, for advertising the particular line of appliances receiving special emphasis during the month. Cooperation of manufacturers has been asked in an endeavor to secure the maximum of attention and interest in the particular appliances being featured.

This plan offers many possibilities. It is not unreasonable to assume that if this local plan is successful it may ultimately be tried on a national scale.

The results accomplished in Indiana during the coming year will be looked forward to with considerable interest by power company representatives and manufacturers throughout the country.



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ORVILLE VANDERMAUSE,
R. 2, Box 67, Casco, Wis.

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• • •

Lights Take the Lead

I love the lights the best of all. Where there are children one can go out and do their work and not be afraid of the children throwing the lamp down and setting the house on fire. When one wants to go from one room to the other just turn the switch. We do not have to sit in the dark any more because we forgot to go to the store for kerosene and it happened often in the past because it was not always convenient for someone to purchase the necessary kerosene. In going to the barn one can have the yard lights turned on and see the way to the barn.

It even means more eggs. When the lights are lit for the hens they scratch and work and that means more eggs. The electricity costs so little it is hardly noticed.

Give me electricity all over on the farm! There's nothing as handy as electricity.

MRS. GEORGE VERHAAGH.
Green Bay, Wis.

CLASSIFIED ADVERTISING

The LYON ELECTRIC COMPANY manufacture electric poultry equipment exclusively. Long, practical experience in the highly developed California rural electric field enables us to furnish quality devices at reasonable prices. The LYON line includes: Brooders—Incubators — Egg Testers — Burglar, Temperature and Power-off Alarms — Heating Elements—Thermostatic Supplies—Time Switches—Wiring Supplies. Write for catalog today. LYON ELECTRIC COMPANY, 2075 Moore Street, San Diego, California.

MERCHANDISING SUPPLEMENT
Electricity on the Farm

Vol. 4 AUGUST, 1931 No. 8

PUSHING SEASONAL BUSINESS

Rural service representatives of Indiana power companies, at a recent conference in Indianapolis, set forth plans for devoting particular emphasis during the different months of next year to the equipment which they consider should be pushed by salesmen during those months.

For instance, in May stress will be placed upon refrigeration, while in June ranges will be pushed with extra effort.

It is planned by the power company representatives to use what advertising space they carry in farm journals, and in other papers reaching farm customers, for advertising the particular line of appliances receiving special emphasis during the month. Cooperation of manufacturers has been asked in an endeavor to secure the maximum of attention and interest in the particular appliances being featured.

This plan offers many possibilities. It is not unreasonable to assume that if this local plan is successful it may ultimately be tried on a national scale.

The results accomplished in Indiana during the coming year will be looked forward to with considerable interest by power company representatives and manufacturers throughout the country.

Selling Farm Electric Equipment Discussed at

RURAL SALES CONFERENCE

AT an informal conference of Indiana power company officials and dealers in farm and electrical equipment, held at Indianapolis on June 30, the matter of merchandising rural electrical equipment was taken up. The market survey submitted by *Electricity on the Farm* was discussed.

Suggestions were made for 1932 advertising as follows:

January—House, Barn and Yard Lighting.

February—Brooders and Incubators.

March—Milkers, Separators, Dairy Water Heaters.

April—Water Systems.

May—Refrigeration.

June—Ranges.

July—Ensilage, Hay Hoist, Grain Elevators, etc.

August—State Fair (to tie with exhibits).

September—Feed Grinding (might combine July and September ads together).

October—Poultry House Lighting and Poultry Fountain Heaters.

November—Fractional H.P. Motors.

December—Christmas Suggestions (General Household Appliances).

This program will be followed by the power companies in the farm trade papers and it was suggested that manufacturers follow a similar schedule for their Indiana advertising.

The matter of the Annual Rural Electrification Short Course Conference at Purdue was brought up and it was decided that Friday afternoon, November 13, would be set aside for a dealer program. Each trade association is to suggest a member to take part on the program, discussing merchandising rural electric equipment.

N. T. Crane gave a report on Rural Refrigerator Week, indicating that 45 newspapers in the state had carried publicity articles at this time and that information indicated that over 100 refrigerators were sold during the week. He also reported on the Indiana Retail Trade Bureau established by the Farmers' Guild. One hundred and twenty newspapers have been contacted and agreed to give assistance in locating dealers for manufacturers, distributors, etc. In this way, a reputable manufacturer can apply to the Farmers' Guide and get a list of men in towns of over 1,000 population in Indiana who will help secure dealers for their products.

Mr. David indicated that quite a common complaint from hardware dealers was that they were not informed on rural lines about to be built and that in many cases the local utility manager would not give the information to dealers.

Mr. Clark discussed the necessity of building load on rural lines from the utility's standpoint, indicating that at best the revenue in proportion to the investment is somewhat small and that it is necessary to build these revenues up as rapidly as possible. After some discussion, it was agreed that state association men could assure their members that the following would be the future policy of cooperating utility companies:

(a) That mailing lists of farm customers would be made available to local dealers.

(b) That local dealers could secure information about rural electric lines to be built in their territory.

(c) That it is not the policy of the Companies that prospective customers must

buy merchandise from them in order to get rural electric service and that if such statements were made by salesmen, the specific instance should be brought to the attention of the chairman.

Mr. Hienton discussed the State Fair Exhibit, pointing out that running water on the farm would be featured, also that the uses of the 5 H. P. and ¼ H. P. motors would be shown. It was suggested that dealers send as many interested prospects as possible in to view this educational exhibit.

Mr. Parvis discussed the milk-cooling regulations which are to be enforced by the State Board of Health giving the following outline:

That the regulations govern the production and handling of milk and apply to every farm producing milk for resale.

That milk must be cooled within one hour after milking to 60 degrees Fahrenheit, or less, and maintained at or below that temperature until delivered, unless it is delivered to a milk plant for pasteurization.

Facilities must be provided in the milk house for cooling and storing milk under above provisions. Water flowing directly from a well through a covered and insulated concrete tank is recommended if the capacity of the tank insures three to four gallons of water for each gallon of milk to be cooled, if the cans are immersed to the neck and if the milk is stirred during the cooling. The milk must be kept in this tank until picked up by the hauler. Metal tanks for cooling milk will not be approved because they offer no insulation.

One-day demonstrations for farm equipment and household equipment were then discussed. A number of such demonstrations are to be arranged this Fall. After the discussion, it was agreed that trade associations would be given notice of intended demonstrations and would notify their members of the plan and suggest that they cooperate by attending the meeting and, if necessary, furnishing some equipment for demonstration.

Mr. Hienton discussed tours which are to be staged in about eleven counties in the near future. He is to notify the chairman of the exact schedule of such tours, which information will be passed on to trade association representatives for their membership.

The following were present at the conference:

Earl L. Clevenger, Pres. Indiana Plumbers, Assoc., Muncie; C. T. Watson, Secy. Indpls. Merchants Plumbers Assoc., Indpls.; G. F. Sheely, Secy. Indiana Retail Hardware Assoc., Indpls.; Ralph David, Indiana Retail Hardware Assoc., Logansport; Cary Covell, Pres. Ind. Implement Dealers Assoc., Angola; H. P. Sheets, National Retail Hardware Assoc., Indpls.; E. H. Aberdeen, Westinghouse Elec. & Mfg. Co., Chicago; E. B. Winsted, Stover-Winsted Co., Inc., Indpls.; A. F. Head, Hoosier Electric Refrigerator Corp., Indpls.; S. C. Leibing, General Electric Co., Indpls.; Fred Fitchey, General Electric Supply Corp., Indpls.; R. J. Fulton, Master Electric Co., Dayton, Ohio; C. D. Leiter, The F. E. Myers and Bro. Co., Ashland, Ohio; R. L. Brown, Westinghouse Electric Supply Co., Indpls.; E. M. Nigh, Frigidaire Corp., Indpls.; N. T. Crane, The Indiana Farmers Guide, Huntington, Ind.; L. M. Roche, Electricity on the Farm, Chicago; T. E. Hienton, Agric. Experiment Station, P. U., Lafayette; T. Leo Clark, Indpls. Power and Light Co., Indpls.; R. E. Blossom, Indpls. Power and Light Co., Indpls.; Harry Boggs, Indpls. Power and Light Co., Indpls.; F. A. Borghoff, Indpls. Power and Light Co., Indpls.; W. J. Shine, Indpls. Power and Light Co., Indpls.; W. D. Wallace, T. H. I. & E. Traction Co., Terre Haute, Ind.; W. J. Parvis, Indiana Electric Corp.; J. R. Campbell, Indiana Electric Corp; C. V. Sorenson, Indiana Electric Corp.

N. E. L. A. Meets Again at Atlantic City

Atlantic City has been chosen as the convention city for the exhibit and 55th Convention of the National Electric Light Association, June 6 to 10, 1932, which will be held in the Atlantic City Auditorium. This announcement was made recently by Paul S. Clapp, Managing Director of the Association, following a decision of the officers of the Association who were elected at the 54th Convention in Atlantic City last month.

RURAL ELECTRIFICATION Salesmen's Forum

Conducted by TRUMAN E. HIENTON

Water Systems

"LET Electricity Fetch the Water" is a slogan which if applied on all electrified farms in the United States would mean the sale of many thousands of new farm electric water systems, many electric motors to operate water pumps already installed and the addition of a considerable load to the lines of electric power and light companies. The adoption also by many of these farmers of electric irrigation pumping to supplement rainfall for many of their crops, which will return a profit to them, would mean the sale of much equipment and electric energy.

Figures obtained on Indiana farms in 1929 by assessors showed that 87 per cent of all farms reporting (177,000) owned automobiles, 14 per cent had electric energy from rural electric lines or individual plants, and only 5 per cent had bath tubs or shower baths. Obviously there were more than 15,000 farm houses with electric power available who did not have a bath tub and presumably an automatic electric water pump. These figures, if all of the Indiana farms were using electric power for pumping water to the bath room, are somewhat similar to those obtained in a survey made by the Wisconsin Power & Light Company and reported in the May, 1931, Merchandising Supplement of *Electricity on the Farm* in which one-third of the electrified farm houses were using electric power for pumping.

The Indiana assessors' figures indicate that 87 out of 108 farmers ride to town in an automobile, but that 93 out of 100, or some member of their families carry all water into the house (7 per cent had water piped into the house). This situation seems particularly difficult to understand when the figures reported in Bulletin 234 of the University of Nebraska Agricultural Experiment Station are considered. Studies made of water carried on 259 farms in Nebraska showed that 42 miles per year was the average distance traveled in carrying the water for household purposes on these farms. The average time spent in carrying water amounted to 162 hours, 4 minutes each year.

Water Consumed

It might seem as if the large amount of time and walking had been spent in carrying excessive amounts of water, but the consumption of water shown was but 5.9 gallons per person per day. This is much below the average amount consumed by households with running water in the home, equipped with bath and flush toilet.

The possibilities of saving the farmer and his family the labor and time indicated above are provided through the use of an automatic electric water pump. The conveniences and comforts of a modern bathroom which depend upon running water also are made possible by the pump. Water in the barn, at the drinking trough, in the poultry and hog houses, all may come through the use of such a pump. Certainly the man who interests the farmer in the purchase and installation of such an outfit is helping to lift the burden of drudgery which has been so long associated with life on the farm.

and to improve the living conditions of the farm family.

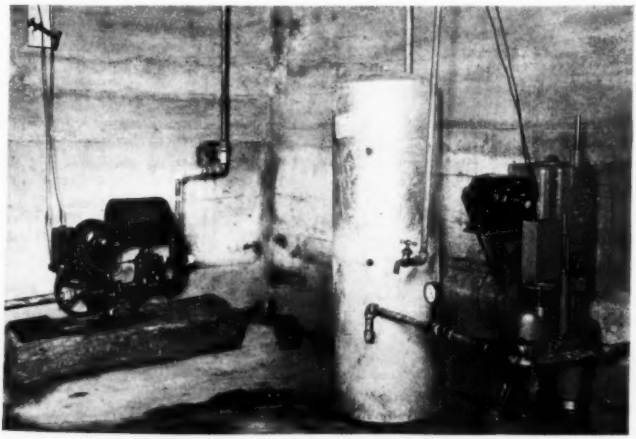
The need for water which must be pumped on the farm needs little justification. The amount of water in cows' milk is over 87 per cent and in eggs is roughly 70 per cent, and investigations conducted at Michigan State College showed that for every pound of milk produced, the animals consumed 3.4 pounds of water. The carcass of a hog is 33.6 to 59.4 per cent water, that of a beef animal is 36.2 to 64.4 per cent and that of a chicken more than 55 per cent, but these amounts represent only a small amount of that required by the animal or fowl during its growth.

Water Requirements

Figures available from various agricultural colleges are not in exact accord on the water requirements per person or per animal. Common recommendations made for average daily water requirements are 25 gallons per person (with bathroom), 10 gallons per horse, 12 gallons per cow, 2 gallons per hog, and 1.5 gallons per sheep. Figures reported from Kansas show that more than 35 gallons per person per day may be required for household use. Results of a test conducted by Michigan State College on the water requirement of lactating dairy cattle which lasted four months showed an average daily requirement of 16.68 gallons of water during the test period. The cows produced an average of 44.0 pounds of milk daily. Conclusions reached state that "Because of the large amount of water required by lactating cows, as shown in this experiment, it is apparent that dairy cows should have free access to an adequate supply of water" (August, 1930, Quarterly Bulletin, Volume 13, No. 1). The results of the Kansas and Michigan tests indicate that the amounts of water required may exceed the common average requirements given.

Water pumps for domestic supply are usually divided into two classes, shallow-well and deep-well. The first is recommended for use in pumping from wells or cisterns in which the water is not more than 22 feet below the level of the pump. The deep-well pump is for use in pumping where the vertical lift from the water to the pump exceeds 22 feet.

The shallow-well pump may be located above or at some distance to the side of the well or cistern,



Two Water Systems, for Hard and Soft Water, in the Basement of the Farm Home of Levi Metzger, Near Rossville, Ind.

so that it is often located in the basement of the house or in another building to protect it from freezing. The pumping head of the deep-well pump must be located above the well, although the storage or pressure tank, where used, may be located at some distance from the well.

A pump jack may be used with either shallow—or deep-well pumps—but must be located over the well or cistern. Where a jack is used with a pump which forces water into a storage or pressure tank, it may be equipped with a switch so as to operate it automatically.

One of the important tasks confronting the power companies and dealers in motors and pumps is that of replacing wind and engine-driven pumps with electric motors. The change from an engine to an electric motor for operating a pump seldom involves any material change in equipment, except for the installation of a larger drive pulley on the pump or pump jack, an automatic switch for the motor where water is to be pumped under pressure and proper wiring for the motor, including fuses of proper size to protect it.

In most farm installations, prior to securing electric power, water is not pumped into a pressure tank or storage tank, but simply into a trough for livestock or into a bucket for household use. Both the dealer and utility representative then should be interested in providing this farm with modern pumping equipment, which of course includes a pressure tank in order that running water becomes available.

Cost of Pumping

In influencing the farmer to substitute electric power for that of a gas engine, the comparative costs of pumping with both kinds of power will be of assistance to the dealer or rural service man. Field survey records were obtained during 1930 in a study of cost of power for pumping water by P. F. Aylesworth of the Farm Management department under the direction of the Agricultural Experiment Station. The average of eight records taken on shallow-well pumps driven by gasoline engines showed a consumption of 1.05 gallons of gasoline per 1,000 gallons of water pumped against *no pressure*. Similar records taken on five shallow-well pumps driven by electric motors showed a use of 1.56 kilowatt-hours per 1,000 gallons pumped against pressures of *20 to 40 pounds*. With gasoline costing 12 cents per gallon and electric energy 5 cents per kilowatt-hour, the costs for pumping 1,000 gallons of water under the above conditions were $0.078 for electric power and $0.126 for gasoline power. These records would indicate that under identical pumping conditions (both pumping against the same pressure) a greater difference in cost of power would result at the figures quoted.

Irrigation Pumps

Another type of pumping which offers a considerable load to the electric power and light companies is that for operating irrigation pumps. The sale of equipment for such purposes is in some sections a very important one and to a limited degree one of universal importance.

The electrification of farms in California has been possible largely because of the load available for operating irrigation pumps. Results of a survey in 1925 showed 7,929 units with a total connected load of 131,909 horsepower in use in the state (University of California Ag. Exp. Station Circular 316). Quoting from this circular the extent of this pumping load is indicated in these words: "The electrically driven irrigation pump is the biggest part of this load, probably as much as 90 per cent. If this load had been evenly distributed over the entire field, each of the 40,330 farmers using electricity for power would have had an average connected load of 15.77 horsepower; each would have used 17,678 kilowatt-hours a year; and each would have had a $273 power bill."

Irrigation in the arid and semi-arid sections of the United States is a necessity for the satisfactory production of crops. The impor-

tance of utilizing pumping in bringing additional land into production in those areas is emphasized in Farmers' Bulletin No. 1404. "Less than 2 per cent of the total land area of the arid and semi-arid sections of the United States is now irrigated, yet reclamation has reached the stage where future progress can be made only through the construction of extensive storage works or the use of underground waters. As storage works require large investment of capital, which implies some form of community effort, the only opportunity for further advance as a result of individual initiative lies in the recovery of underground water."

An interesting comment is made in this bulletin, on the use of the electric motor for operating irrigation pumps, "Where electric current is obtainable at reasonable cost, it is the most satisfactory source of power for irrigation pumping. Electric motors combine reasonably low cost, safety, high efficiency, reliability, and ease of operation."

Truck Farm Irrigation

Irrigation in the humid region of the United States is not a practice on general farms, but one used rather commonly by vegetable gardeners and nurserymen and to a limited extent by orchardists. The importance attached to the use of irrigation as insurance against crop reduction or failure is well illustrated by a survey of 138 truck farms near Indianapolis. It is reported by William H. Branson of the Indianapolis Power and Light Company, who conducted the survey for his company, that 100 of the 138 gardeners were using irrigation.

Gardeners located near towns and cities who are using irrigation most often use their own private pumping plants, even though in many cases a water supply from the nearby town or city may be available. Electric power is used for operating the pumps where the power company has made an effort to induce the gardener to apply it and has a satisfactory rate available.

Water pumps used for supplying overhead irrigation systems usually furnish the water supply for the residence and also that for the washing of vegetables. Motor sizes vary widely, with depth of well and size of pump as important factors affecting the size. A common unit used in the Indianapolis district is the 5-horsepower motor to operate a pumping plant supplying approximately 4 acres, irrigated by the overhead system.

Orchardists in the humid region are to a limited degree irrigating their orchards to supplement rainfall. Considerable progress has been made along this line especially in Virginia, where Prof. C. E. Seitz of Virginia Polytechnic Institute has been very interested in the subject and has assisted several growers in their irrigation plans. Results of irrigation in Virginia are reported in the July, 1930, edition of "Electricity on the Farm," by Professor Seitz.

Recent bulletins on household water supply which are of interest are:

"Electrically Operated Water Systems for the Kansas Home," Ext. Bulletin 68, Kansas State Agri. College, Manhattan, Kansas.

"Water Supply and Sewage Disposal Systems for Farm Homes," Bulletin 245, University of Ne-

This deep well pump is installed in concrete pit off basement

braska, Ag. Exp. Station, Lincoln, Nebr.

"Water Systems for the Farm Home," Ext. Bulletin No. 170, Purdue University, Lafayette, Indiana.

"Turn on the Water," Circular 229, University of Wisconsin, Agri. Extension Service, Madison, Wisconsin.

Bulletins on irrigation and pumping which will be found of interest are:

"Irrigation by Overhead Sprinkling," Circular 4, Univ. of California, Agri. Extension Service, Berkeley, California.

"Irrigation West of the Cascades," Bulletin No. 140, State College of Washington, Agri. Exp. Station, Pullman, Washington.

"Spray Irrigation in the Eastern States," Farmers' Bulletin 1529, "Surface Irrigation in the Eastern States," Farmers' Bulletin 1635, and "Pumping from Wells for Irrigation," Farmers Bulletin No. 404, all from U. S. Department of Agriculture or county agents. Several of the automatic water systems available are manufactured by the following companies:

Cullman Wheel Co., Chicago, Ill.
Crane Company, Chicago, Ill.
Dayton Pump & Mfg. Co., Dayton, Ohio.
Decatur Pump Co., Decatur, Ill.
Delco Appliance Corp., Rochester, N. Y.
Deming Company, Salem, Ohio.
Dempster Mill Mfg. Co., Beatrice, Nebr.
Duro Company, Dayton, Ohio.
Fairbanks-Morse & Co., Chicago, Ill.
Flint & Walling Mfg. Co., Kendallville, Indiana.
Fort Wayne Engr. & Mfg. Co., Fort Wayne, Indiana.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Kewanee Private Utilities Co., Kewanee, Ill.
The Lauson Co., New Holstein, Wis.,
F. E. Myers & Bro. Co., Ashland, Ohio.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

Pumps for irrigation purposes are manufactured by:

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Well Works, Aurora, Ill.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, Ohio.
Dempster Mill Mfg. Co., Beatrice, Nebr.
Fairbanks-Morse & Co., Chicago, Illinois.
Flint & Walling Mfg. Co., Kendallville, Ind.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Hayes Pump & Planter Co., Galva, Ill.
F. E. Myers & Bro. Co., Ashland, Ohio.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Yuba Mfg. Co., San Francisco, Calif.

Equipment for use with overhead irrigation systems is manufactured by:

March Automatic Irrigation Co., Muskegon, Mich.
Skinner Irrigation Co., Troy, Ohio.
White-Showers, Detroit, Michigan.

(*Editors Note: If you have any questions which the preceding text has not cleared up, such queries will be discussed in future issues, if you will send them to Truman E. Hienton, care* ELECTRICITY ON THE FARM, *24 W. 40th St., New York City.*)

Virginia Company Awarded Coffin Prize

Among the outstanding accomplishments which led to the Virginia Electric and Power Company receiving the Charles A. Coffin Foundation award at the annual convention of the National Electric Light Association last month, were the following: The number of rural customers served by the company was increased forty percent during the year. With an increase of five percent in the number of its customers, the average consumption of energy was increased fifteen percent, and, by means of a promotional rate, the development of domestic business was instituted. This prize is awarded every year to the firm which has done the most for the advancement of electrical service during the preceding year and it was established by the General Electric Company in honor of the company's founder. A check of $1,000 also accompanied the award.

National Telephone Has Appliance Division.—The National Telephone Supply Company of Cleveland, Ohio, announce the formation of a new division—the Electrical Appliance Division. This division will manufacture and sell a line of high-grade home and table electrical appliances.

TAKING MILK OUT OF THE HOME

By J. P. SCHAENZER

A SUBSTANTIALLY built milk house of good design is essential in the production of clean and a good quality of milk and cream. Needless to say, everyone realizes that the condition of the stable, health of the cows and milker, and the sanitation and cleanliness of the utensils also play an important part in producing better dairy products.

A good milk house with handy equipment saves the producer time and makes it easier for him to produce a product as prescribed by the consumer. The equipment does not necessarily have to be expensive to be adequate and entirely satisfactory. Nor does it require high priced cows and much extra work to produce milk of a high standard.

The chief reason for a milk house, separate from a barn, is so that the milk can be removed promptly to a place where it cannot absorb stable odors and be contaminated with dust, dirt and insects. Dairy products and milk especially are very easily contaminated by coming in contact with foreign substance and very readily absorb barn odors. This may make them unfit for the market as well as lessen the market value. It may also cause souring and have harmful effects on the consumer.

Higher prices are paid in some places for fluid milk of a low bacteria count than for milk of a high count. This also holds for clean as compared with dirty milk. The cheese, butter, condensed milk, powdered milk, and ice cream of a high grade of milk usually command a better price than that produced under unsanitary conditions.

A number of states have regulations governing the production, handling and sale of milk for direct consumption as set up by the United States Department of Agriculture for Grade A milk. For this reason, it may be well to build a milk house conforming with

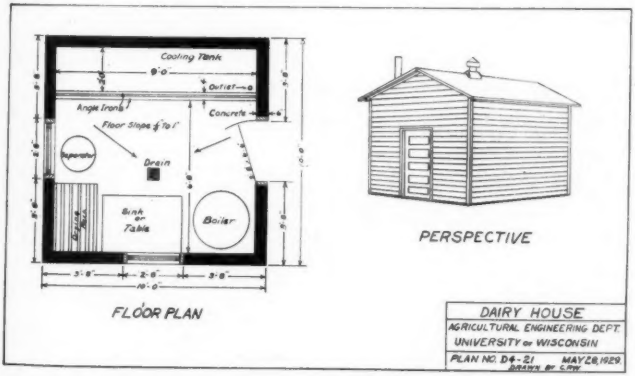


Fig. 1. Floor plan and perspective of a dairy house ten feet square. The size is ample for the average size herd of milch cows.

these regulations. The standards as set up for the location, construction and care of this building are as follows:

1. A milk house or milk room shall be provided that is separate from stables and wash rooms, and located free from contaminating surroundings, at least ten feet from stables, and shall be constructed with tight walls and ceiling, with a tight floor and proper drainage facilities.

2. Proper windows with screens shall be provided for the milk house or rooms where milk is handled.

3. The milk house or room shall be used exclusively in caring for milk and milk utensils.

The Milk House Location

The milk house may be built as a separate unit or directly adjacent to the cow stable. If it is attached to the stable it is important that there be no doors which open directly into the latter. This is to prevent odors from the barn and dust entering the dairy house.

The milk house should not be too far from the place where the milk is produced. If it is it will require much extra labor to carry the milk from each cow to the milk house. To assist in producing a wholesome and clean milk, it is necessary that the milk be removed from the stable at once after being drawn from the cow and not gathered in eight or ten gallon cans standing behind the cows. The milk should also be cooled as soon as possible as it keeps down the bacteria growth and adds to the flavor.

A well drained, and high spot should be selected for the location of the dairy house. Manure and garbage should be kept away from the house because of objectionable odors and breeding places for flies and insects.

The accompanying diagrams show a milk house ten feet square, as designed by the Agricultural Engineering Department, of the University of Wisconsin. This is considered to be big enough for a herd of twelve to twenty milk cows where whole milk is sold. Where cream is produced, the herd may be much larger.

One of the first requisites of a milk house to be used in the northern states is that it be well insulated. Insulation board is used on both sides of the 2 x 4 studdings and also on the ceiling as shown in Figure 2. This insulating board extends down to the ground on the outside of the house and over the lower concrete wall. This is considered necessary so as to make it warm enough for winter use. The production of a high quality of milk is as important during the winter as the summer. It is therefore of extreme importance that the milk house be so constructed that it can be easily heated and that the cooling tank will not freeze up. Drop siding is used to cover the walls on the outside. This also extends all the way to the ground to insure the warmth of the building. An objection may be raised against this as it is apt to decay and needs to be replaced occasionally. This objection is, however, not serious when one considers the additional insulation provided. The inside walls of the building are covered with one inch D & M flooring. This provides a smooth wall and also adds to the warmth. It is suggested that the inside walls and ceiling be kept thoroughly covered with a good white enamel paint.

Two windows are provided for this milk house. Ample light should be supplied and yet one must consider that too much window space will decrease the warmth of the building. For this reason, it may become necessary to use storm windows during the winter months. The United States Department of Agriculture recommends that the window glass surface be equivalent to at least ten per cent of the floor area. Screens should be provided for the summer months for the windows, door and ventilator to prevent flies and insects from entering. Germs which affect the quality of the milk as well as disease germs are carried by these insects. These may get directly into the milk or be deposited on

the utensils used in the milk production.

A one-quarter pitch roof is suggested, and covered with prepared roofing. Other roofing material such as slate, tile, asbestos shingles, wooden shingles or metal may be used.

A ventilator with eight inch flue is shown in Figure 2. It reaches from the ceiling out through the peak of the roof. The opening is covered to keep out rain and snow. It is provided with a slide on the lower end so that the ventilator can be closed or opened depending upon the weather. Because of the large amount of steam and water used in a milk house, thorough ventilation is very important. If the house is damp, the woodwork will rot very rapidly and also will be a very favorable place for the growth of bacteria and molds. Proper ventilation also insures an abundance of fresh air so that the milk will not be contaminated by undesirable odors.

A chimney or smoke pipe is necessary if artificial heat is to be provided and also for a boiler or stove for heating water to clean the utensils. A good chimney is preferable as it is less of a fire hazard.

A concrete floor, five inches thick, is considered to be the most practical as it does not decay and is not affected by moisture. A mixture of one part of cement, two of sand and four of stone is satisfactory. If a very nice job is desired, this may be covered with a top coat made of one part of cement and two parts of sand. If the corners are rounded, it makes it easier to clean the floor. The floor should be sloped ¼" to 1' toward the center of the house. A bell trap should be provided so as to insure thorough drainage. Four to six inch tile should be used in disposing of the waste from the milk house.

Sturdy Construction

The concrete walls are three feet high and extend six inches into the ground. On the one side it also is a part of the cooling tank which is two feet wide and extends along one entire side of the building. The inside wall of the tank is about 14 inches higher than the floor. This low wall makes it much easier to lift cans of milk into and out of the cooling tank. The upper corners of the wall are protected with 1½" angle iron to prevent injury to the concrete when cans are placed into the tank or taken out. Three-eights inch iron rods spaced twelve inches apart and running both ways are used for reinforcing the concrete

(*Continued on page S 13*)

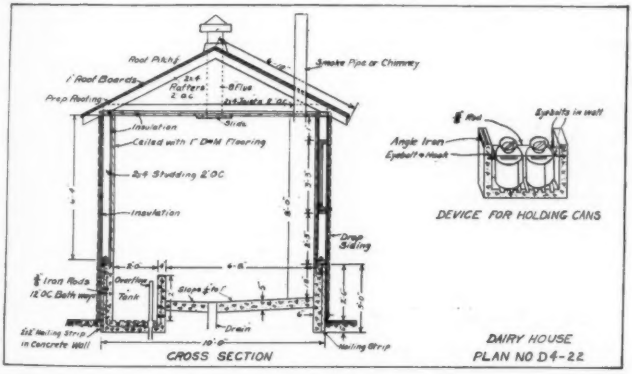


Fig. 2. Cross section of the dairy house. Thorough insulation is essential for all year use. Note the device for holding down partially filled cans and thus prevent them from tipping over.

BOB'S PAGE

Devoted to Merchandising of Electrical Equipment in Rural Communities

Conducted by Robt. J. Fulton

Electrifying the Farm

WHEN it comes to wiring a set of farm buildings and putting electricity to work, the farmer has the advantage over any other class of user, an advantage he seldom enjoys in any of his other purchases. A great many clever and useful electrical devices have been invented and perfected and are now produced in quantity for the city trade.

Unlike the plow, binder, mower, or the corn husker, the development of which equipment was slow, and the cost of new models being made at the expense of the farmer, electrical devices have long ago passed through the process of experiment and development. Products operated by electricity are today offered to farmers in a thoroughly developed form. Of course, improvements are still being made, but the market is large and the cost of the various electrical devices is low when you consider the comfort and profit they afford.

Feed Grinding and Elevating

The farmer can increase the value of his home produce by using a small feed grinder. Cattle and chickens eat more feed if it is freshly ground. Grinding at home, with the use of a modern type of grinder, operated by electric motor, is less expensive than having feed ground at a custom mill. Moreover, the farmer saves time and effort in trucking and waiting at the mill.

Utility Portable Motor

Ten men are required to do the work of a one-horsepower motor. Therefore, the farmer who uses a five-horsepower motor, for example, is using the lowest priced labor and is, at the same time, releasing what help he does have for other uses. Motors from 1 to 7½ horsepower can be used for grinding, mixing and elevating grain; silo filling, grinding hay, running hay baler, shredding and shelling corn, and driving a wood saw.

Milking Machines

The electric milking machine reduces the time required for milking to about one-half, and it is agreed that milking is far less tiresome when done electrically. Bacteria count can be kept low by thorough washing and sterilization of the utensils and parts. Milking machines are good workers on dairy farms and should result in a real net saving after paying for electricity and also allowing for interest and depreciation on the equipment itself.

Water Systems

There should be running water in every home where the comfort of the wife and the health of the children are the first concern. Moreover, fresh and clean water automatically supplied to live stock and poultry increases milk and egg production and saves time and trouble. An automatic electric pumping unit connected to light lines will deliver all the fresh water needed at any time or any place without effort on the part of the farmer. Average farm requirements are: 35 gallons per day per person; 10 gallons per day per horse, 12 gallons per day per cow, 3 gallons a day per 100 hens, 2 gallons a day per hog.

A housewife carries 20 tons of water per year and takes 200,000 steps to do it. This means that thirty 8-hour days a year are spent in carrying water. A farmer spends about one and a half months out

of the year pumping and carrying water.

Work Shop

Drill press, grindstone, emery wheel and electric drill, as well as an electric soldering iron, can be real money savers in making repairs quickly and conveniently. Sickle blades can be sharpened also, and this work can all be done with a ½ H.P. motor and grinder that retails around $26.

You, Mr. Implement Dealer, Mr. Hardware Dealer, Mr. Electric Dealer and Mr. Plumber, should get in touch with your local power company in order to familiarize yourself with the plans they have on rural extension. Also secure first-hand information from the power company as to the results of tests on various electrically operated equipment, especially ensilage cutting. You will then realize the nice business that can be gotten from the rural field.

Dairy House

(*Continued from S* 11)

of the tank. The floor is corrugated as shown to provide for better circulation of the water.

A 1¼" overflow pipe is provided to insure a circulation of water at all times and to prevent the tank from overflowing. A coupling at the floor of the tank enables one to remove the overflow pipe for completely emptying and cleaning the tank. An inlet for supplying cool fresh water is also necessary.

A can which is not full will float when placed in water. Occasionally, it may tip over and empty its contents or have the milk or cream get mixed with water. A device for holding partially filled cans in place is shown in Figure 2. A ⅜" rod bent in a rectangular shape is used for this purpose. It is fastened to the far wall of the cooling tank by means of two eye-bolts and thus swings as on a hinge. Partially filled cans are placed in the tank, the rectangular shaped rod is put down over them and fastened by a hook which is attached to an eyebolt in the front wall. By using this method of

On World's Greatest Airship "U. S. S. Akron"—electric service by Universal
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THE installations shown above attest the world-wide esteem in which Universal Electric Plants are held. They are first choice always when the highest quality is a requisite. These plants are especially noted for great dependability and ultra-smoothness. They are extremely quiet, economical and long lasting. Electrical parts are designed and built as units with fine gasoline engines of four, six and eight cylinders. Universal Electric Plants range in size from 1 to 35 KW, AC and DC, in standard and special voltages, in portable, stationary, and marine types.

Complete literature on request to Dept. 46, Universal Motor Company, Oshkosh, Wis., U. S. A.

Universal MOTOR CO. MOTOR COMPANY

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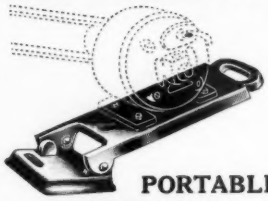


PORTABLE MOTOR BASE

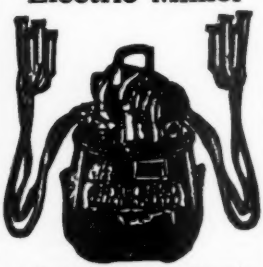
With it you can use one motor to operate your grinder, washing machine, vacuum pump sausage grinder, line shaft, or any other installation which requires ½ H.P. or less to drive it. Write for prices.

One feature of high-grade line of Electric Farm Equipment.

ELECTRIC PUMPERS — PUMP JACKS — WATER SYSTEMS — GRINDERS

BRILLION IRON WORKS
Brillion, Wis.

Blue Ribbon Electric Milker



A Portable Milker Requiring No Installation

The "Blue Ribbon" is a self-contained milker, requiring no pipe lines or extra equipment of any kind. It operates direct from the light socket of either high line or farm light plant. A beautiful catalog and complete information will be sent on request. Write us today.

Electric Products Corporation
7 Bluff Ave., La Grange, Ill.

anchoring the cans, losses are prevented.

The floor space is used for different purposes as shown in Figure 1. As pointed out before, one entire side is devoted to the cooling tank which is nine feet long and two feet deep and wide. For convenience sake, and to secure an abundance of light, the table or sink is placed at the center of the opposite wall and near the window. A boiler or stove for heating water is placed on one side and a drying rack on the other side of the table or sink. If a cream separator is used, it is to be placed at the center of the far end of the room.

Other Essentials

It may be well to mention a few other things that are essential in the production of clean milk. Clipping the cows' flanks and udder is considered a good practice. Dampening or washing the cows' udder before each milking helps in keeping dust and dirt out of the milk. Dry milking is more sanitary than wet milking. The first few strains of milk from each teat should be rejected as this milk is oftentimes high in bacteria content. Small top pails should be used to prevent foreign material from getting into the milk. Dusty hay and feeds should not be fed directly before milking the cows. All utensils should be thoroughly cleaned so as not to contaminate the milk. If all of these precautions are taken, a high quality of milk is insured.

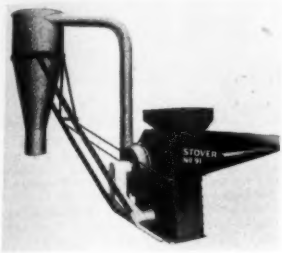
New Hammer Mill Announced by Stover

The Stover Manufacturing and Engine Company of Freeport, Illinois, has just announced a new model of hammer mill which embodies a number of advancements in construction.

The new mill will be known as Stover No. 91 and is designed for grinding Alfalfa, Kaffir Corn, Pea Vines, Sheaf Oats, Velvet Beans, Corn Stalks, Snap Corn, Ear Corn, Shelled Corn and all small grains. It lists at $135.00 completely equipped with blower, cyclone, pipe, two sets of screens and small grain hopper.

Among the changes noted in the new mill are the following:

The blower is mounted on the main shaft and is of cast iron construction instead of sheet metal. A cast chilled concave is



The New Stover Mill

located in the throat opening. The design and position of the hammers form a "V" shape in the throat opening.

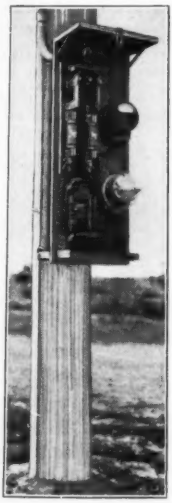
Other features of the new No. 91 are the steel deflectors, blower pipe air vent, feed table of same weight metal as top of mill, feed table 36 inches from ground at highest point, permitting easy feeding, case hardened hammers and hammer shafts, extra heavy design hammer discs. The hammer head operates toward the feed table, in the same direction as a thresher cylinder. Screens are of one piece and are quickly removable without tools.

The new No. 91 is equipped with both a small grain hopper and feeding auger. The small hopper provides a convenient method of feeding small grain only or evenly mixed with roughage feeding over the feed table. The feed auger delivers the ground material immediately to the suction pipe of the blower.

Presentation by Master Electric Company

The Master Electric Company of Dayton, Ohio, prominent manufacturers of electric motors has just issued a twenty-eight page booklet entitled "Your Guarantee for More and Better Master Motors."

The document is in the form of a illustrated description of the Master Motors Company Plant, giving details on the various stages of manufacture, as well as data on the line of small motors manufactured by the company. The book is attractively and interestingly prepared, and gives a favorable impression of the Master plant and organization.



Weatherproof Steel Enclosures

For Outdoor Meter Installations

On rural installation the logical place for the meter is on a pole in a central location in the farm yard. This makes for a more economical distribution layout for the customer and for the company.

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Meter Boxes and Meter Service Switches

are so reasonably priced that their cost compares favorably with that of wooden boxes which are nowhere near so convenient and durable. They are easily mounted and are weather and moisture proof.

Illustration shows No. 2-D for two meters.

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Beatrice, Nebraska

A Banjo Electric Clock

With so many homes "going Colonial" in their decorative appointments, the banjo clocks which have just been added to the Sunbeam Eteratime line of electric clocks, made by the Chicago Flexible Shaft Company, Chicago, should fill a need.

They carry out the traditions

of Colonial cabinet-making, and are fashioned of mahogany combined with black walnut. The panel overlays are of oriental walnut and aspen, and the lyre-shaped grille is of black walnut.

This model is made in two sizes: the Mount Vernon, 29 inches high and 8 inches wide, with 5-inch silvered dial; and the Monticello, 20½ inches high and 6 inches wide, with 3½-inch dial finished in silver.

* * *

Debon-Air Fan—The Merchandising Department of the Westinghouse Electric & Manufacturing Company, Mansfield, Ohio, announce production of the Debon-air electric fan. The basic construction is that of the standard Westinghouse ten-inch oscillating fan, while the design and finish are intended to harmonize with furnishings of the modern home. Micarta blades are used, while the pedestal and guard are finished with silver oxide. Fan operates at two speeds.

* * *

Chicago Flexible Sunbeam Mixmaster— The Sunbeam Mixmaster, manufactured by the Chicago Flexible Shaft Company, of Chicago, Ill., is now fitted with a fruit juice extractor attachment with an adjustable spout which may be turned so that the juice flows in any direction, into a mixing bowl in place in the mixer, or into any other bowl. The extractor is fitted with an arrangement for dripping oil into mayonnaise at any speed desired. The beaters are separately removable, and may be operated either single or in combination, singly for light drinks and together for heavier mixtures.

* * *

Midnight Fire and Burglar Alarms— A pamphlet illustrating and describing the fire and burglar alarm systems manufactured by the Midnight Alarm System, 2327 Chickasaw Street, Cincinnati, Ohio, has been issued by this company. Details as to construction and operation of the systems are included in the folder.

* * *

A Food Mixer and Extractor

The Hamilton Beach Manufacturing Company of Racine, Wis., has recently placed on the market a new model household food mixer, known as the "Hamilton Beach 'Combination' Food Mixer and Juice Extractor." One of the features of the appliance is a ball-thrust bearing for the juice extractor. This bearing keeps the extractor attachment quiet. It is possible to lift the large extractor bowl free from all metal parts in order to wash it like a

china dish. The bowl is 7 inches in diameter and 3 inches deep.

The appliance can be changed from the extractor to the mixer in a very short time. It is also possible to take the mixer from the stand and use it for mashing potatoes, mixing icings, or for other jobs where a portable mixer can be used.